AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

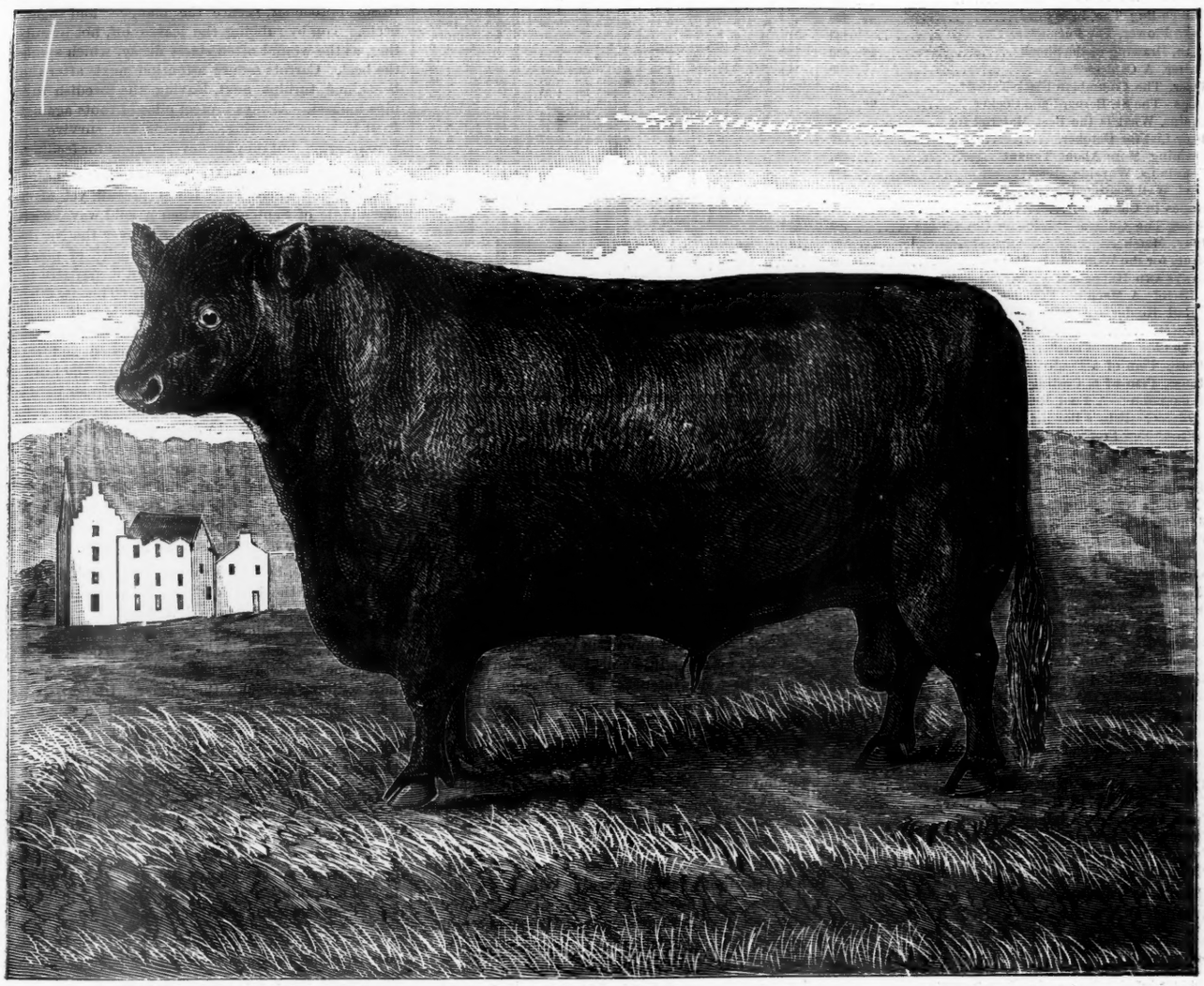
"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

ORANGE JUDD COMPANY, Publishers and Proprietors, 245 Broadway.

ESTABLISHED IN 1842.
German Edition issued at the same rates as in English.

TERMS: $1.50 per Annum in Advance, post-free; Four Copies $5.—Single Number, 15 Cents.

VOLUME XXXIX.—No. 10. NEW YORK, OCTOBER, 1880. NEW SERIES—No. 405.



THE POLLED ANGUS BULL "JUDGE," (1150).—*Drawn and Engraved for the American Agriculturist.*

The fine bull "Judge," now five years old, was recently purchased of his breeder and successful exhibitor, Sir George Macpherson Grant, Bart., M.P., of Ballindalloch, Strathspey, Scotland, for the Whitfield Model Farm at Rongenunt, Parish of St. Cesaire, County of Ronville, Province of Quebec, Canada. He is one of the most famous prize-winners of his breed in the world, having crowned a very unusual list of winnings at Scotch shows in the years 1876 and 1877, by winning the first prize and gold medal at the Paris International Exposition in 1878 as a three-year-old Angus, or Aberdeen bull. His pedigree includes several of the most famous of the foundation stock of this remarkable beef breed, now growing so rapidly in favor on both sides of the Atlantic. With him are imported a number of excellent cows of his own breed—the Angus, or Aberdeen—and both males and females of the Hereford, Ayrshire, Galloway, West Highland, and Shetland breeds, all bought by Mr. Whitfield and destined for his model farm, at which herds of Shorthorns, Devons, Ayrshires, Jerseys, and Kerrys, are already established. We are informed that this varied stock has been selected with great care, and with a view to secure the best possible representation of the respective breeds. The Galloways, West Highlands, and Shetlands, have been rarely seen in this country; the last-named never before, so far as we know.

The above portrait is from a photograph taken at the time of the Paris Exposition of 1878. "Judge" has since that time altered somewhat in form, as would be expected, having become broader, deeper, and more massive, with no loss of the nearly perfect symmetry represented in the engraving. His pedigree in the line of dams, is as follows:

"Judge" (1150), bred by Sir George Macpherson Grant, dropped February 7th, 1875; sire, "Scotsman" (474), by "Jim Crow 3d" (350).
Dam "Jilt" (973), by "Black Prince" (366).
Gr. dam "Beauty" (1180), by "Young Jock" (4).
G. gr. dam "Favorite" by "Gray-breasted Jock" (2).

The attention of the readers of the *American Agriculturist* has been repeatedly directed to this fine breed. The advantage which they offer to shippers of live beef in having no horns is of itself of great importance, but when we consider that they hold their own with the best families of the Shorthorn breed, which they rival in size, as economical beef producers and quick feeders, it seems certain that they are soon to become the favorite breed for the chief beef-producing regions of this country, especially for the Great Plains and Texas. A few years ago the experiment was fairly tried by the introduction of a fine bull or two of this breed in Central Kansas, and all who have handled his progeny are anxious for more, and are taking steps to procure them. Half-bred bulls impress their characteristics strongly, and few horns appear on either sex before the third generation. Of course in herding and handling in droves, they are not dangerous to horses or men, even should they inherit the disposition of the Texan cattle, which have a reputation for fierceness. The improved beef-breeds are all docile, gentle, and easily handled, and the Angus particularly. They are by no means defenseless, as some might think; but with the poll-knob, which is largely developed, they strike terrible blows and make a good fight if necessary.

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ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

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Nitrification, or the formation of available compounds of nitrogen is now generally thought, by scientific men, to be due to the action of a living organism—a minute fungus—and the process is a fermentation like that which is caused by the yeast plant.

Calendar for October, 1880.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	F	5 57	5 42	3 10	5 57	5 43	3 11	5 56	5 43	3 13
2	S	5 58	5 40	4 16	5 58	5 41	4 16	5 57	5 42	4 17
3	S	6 0	5 39	sets	6 0	5 39	sets	5 58	5 40	sets
4	M	6 1	5 37	5 28	6 1	5 38	5 31	5 59	5 39	5 35
5	T	6 2	5 35	6 2	6 2	5 36	6 6	6 0	5 37	6 11
6	W	6 3	5 33	6 42	6 3	5 34	6 47	6 1	5 35	6 53
7	T	6 4	5 32	7 30	6 4	5 33	7 37	6 2	5 34	7 43
8	F	6 5	5 30	8 23	6 5	5 31	8 35	6 3	5 33	8 41
9	S	6 6	5 28	9 34	6 6	5 30	9 40	6 4	5 31	9 46
10	S	6 7	5 27	10 45	6 7	5 28	10 50	6 5	5 29	10 55
11	M	6 8	5 25	11 57	6 8	5 26	morn	6 6	5 28	morn
12	T	6 10	5 24	morn	6 9	5 25	0 1	6 7	5 26	0 6
13	W	6 11	5 22	1 9	6 10	5 23	1 12	6 8	5 25	1 15
14	T	6 12	5 20	2 20	6 11	5 22	2 21	6 9	5 23	2 23
15	F	6 13	5 19	3 29	6 12	5 20	3 28	6 10	5 22	3 26
16	S	6 14	5 17	4 36	6 13	5 19	4 35	6 11	5 21	4 35
17	S	6 16	5 15	rises	6 14	5 17	rises	6 12	5 19	rises
18	M	6 17	5 14	5 8	6 15	5 16	5 12	6 13	5 18	5 18
19	T	6 18	5 12	5 42	6 16	5 14	5 47	6 14	5 16	5 53
20	W	6 19	5 11	6 21	6 17	5 13	6 27	6 15	5 15	6 33
21	T	6 20	5 9	7 8	6 18	5 11	7 12	6 16	5 14	7 18
22	F	6 21	5 8	7 56	6 19	5 10	8 2	6 17	5 12	8 8
23	S	6 23	5 6	8 50	6 20	5 9	8 56	6 18	5 11	9 2
24	S	6 24	5 5	9 48	6 21	5 7	9 54	6 19	5 10	9 59
25	M	6 25	5 3	10 49	6 23	5 6	10 53	6 20	5 8	10 57
26	T	6 26	5 2	11 50	6 24	5 4	11 54	6 21	5 7	11 57
27	W	6 28	5 0	morn	6 25	5 3	morn	6 22	5 6	morn
28	T	6 29	4 59	0 53	6 26	5 2	0 55	6 23	5 5	0 57
29	F	6 30	4 58	1 57	6 27	5 0	1 58	6 24	5 3	1 59
30	S	6 31	4 56	3 3	6 28	4 59	3 3	6 25	5 2	3 3
31	S	6 33	4 55	4 12	6 30	4 58	4 11	6 26	5 1	4 9

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	3 11 59 ev.	11 47 ev.	11 35 ev.	11 23 ev.	10 53 ev.
1st Quart	10 7 51 ev.	7 39 ev.	7 27 ev.	7 15 ev.	6 45 ev.
Full M'n	17 11 42 ev.	11 30 ev.	11 18 ev.	11 6 ev.	10 36 ev.
3d Quart.	26 2 15 mo.	2 3 mo.	1 52 mo	1 39 mo.	1 9 mo.

AMERICAN AGRICULTURIST.

NEW YORK, OCTOBER, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Grass is our most important crop, and it is essential to its best condition next spring and summer that it be well wintered. The roots are benefited by the thick mulch of late autumn growth. Therefore do not feed off the meadows which it is intended to mow next year, but rather top-dress with a fine compost, which may be largely composed of swamp muck treated with lime slaked with brine.

Weeds in Grass Land may be very easily seen and destroyed this month by the use of the "spud," a broad chisel-blade attached to a handle like that of a spade or long-handled shovel, having a spur upon it for the foot to aid in thrusting it into the ground. A boy with an instrument of this kind can rapidly clear grass land of buttercups, daisies, and a multitude of other biennial and perennial weeds.

Grass Seed may be sown upon spots in both pastures and meadows where the stand is not good, and if harrowed over with a dressing of manure or some "fertilizer," will often work a complete renewal of the grass.

Winter Grain.—It is not too late to sow wheat or rye, see "Hints" for last month. More seed is uniformly required for late sowing, because the young plants will not tiller so much—that is, throw out so many shoots which will form flower-stalks and heads in the spring. To prevent smut, use a pickle of four ounces of blue vitriol, or "blue stone," to a gallon of water; when dissolved, use half a gallon to the bushel of wheat, sprinkling it over the heap on a barn-floor and stirring until every grain is wetted, then dry by sifting quicklime over the heap and shoveling it over.

Top-dressing.—Bone dust or "tankings," or some fertilizer in which the nitrogen is not in the form of ammonia, and not soluble, is the best for late autumn application to grass or grain. Such a manure has some immediate effect, yet is not washed away in solution by heavy rains, but shows its potency in the spring.

Potatoes.—The sooner they are dug now the better. It is best to keep them a while either in protected heaps in the field, or on some unused floor. They throw off much moisture within a few days, and will heat if in large heaps or too deep in the bins. When thoroughly dry, they may be placed in secure pits or in the cellar. Potatoes are injured at once by frost, and gradually by sunlight, or even by diffused light. They should, therefore, be kept from the light as much as possible, and decayed ones carefully culled out before they are put away.

Roots are now making their best growth. Moderately warm days and cold nights seem to have a great effect upon them. As the time for heavy frosts approaches, secure the mangels and sugar-beets. Top by rubbing the leaves off, not by cutting, as the wound often starts decay, which spoils the beet. Carrots secure attention next after the beets, and turnips next, leaving the Swedish turnips longest. Always protect piles of roots against frost by some covering. Turnips will survive severe freezing, but they are never so good for feeding.

Corn.—There is probably little corn left standing in the region where early frosts prevail, yet after the middle of September, when a cold wave, with two or three frosty nights, passes over the Northern States, we often have a long "spell" of pleasant weather, and if corn has escaped it may still be cut, and the fodder will be good. This is, however, exactly the weather for husking, if other more pressing work is finished. If there is a market for husks, the ears may be picked and the husking done in the barn; but otherwise the husking must be done in the field, and it is poor policy to wait after the stalks are dry and the soft ears pretty well hardened. In fields where most of the stalks have two ears, and there are none without ears and they are large, a man will sometimes husk 100 bushes of ears a day, and now and then a "champion" husker will husk the corn on an acre of ground yielding 80 bushels of shelled corn or over, but other hands must bind his stalks.

Corn Fodder, by which we mean the stalks after husking (not the leaves of the corn merely stripped off), should be bound in bundles, probably best done with willow withes, and stooked up so as to shed rain. Large stooks, well set and firmly bound may be left in the field until needed for feeding, without injury to the fodder. In fact, it is often brighter and better when treated in this way than in any other. In stacks, or in sheds, it is likely to heat and mould, unless it can be more thoroughly dried than we can be sure of having it.

Fodder Corn, which, of course, was cut before the first frost, or much of its value was lost, should be handled much in the same way. As soon as the stalks are sufficiently dry, and the weather so cool that danger from moulding is past, put it up in small bundles, and set these together in large stooks in the field, bound securely at the top.

Seed Corn.—The selections of seed corn, though usually made this month, ought to be done about September first, for then one going among the standing corn can select the ears likely to produce corn most to his liking, much better than after the corn is cut up. It is best to have reference to earliness of maturity, size of stalk, ability to stand up, the number of brace roots, and the amount of leaf, as well as to the size of the ears, and the number upon a stalk. But one who is "breeding" corn should look farther; the shape of the ear is important; the butt should be small for convenience of husking, and the cob small and well covered, the rows of kernels perfectly even, and the husks long enough to protect the grain from the sight of birds, which are often tempted by the sight of the corn to do a good deal of damage. Every farmer who selects his own seed corn with care, will, in a few years, find that he has a variety of his own breeding quite different from the corn of his neighbors, and which ought to be a decided improvement on the original stock. At husking time we can only select ears, but when the selection is made among standing corn, the best plan is to tie a cord around the selected ones near the tip, so as to prevent the huskers stripping off the husks. They will then throw the tied ears aside, and they

may be gathered, husked, and sorted according to their perfection at leisure, braided together, and hung up in a dry loft, or in the peak of the corn crib.

Corn Crib.—The only perfect protection of a small building against rats, is the setting it upon posts protected by tin, by broad caps, or in some such way. A corn floor is sometimes made in the peak of the barn roof, above the tie-beams, and resting upon them fully half the length of the rafters above the eaves. This is not, however, perfect protection, though it often remains for years before the rats find any way of getting to it; it is an excellent place to keep corn and seeds of all kinds. The grain must be hoisted by a horse with a block and tackle. Free ventilation is absolutely essential to the proper curing of the corn crop, hence corn cribs and bins have open, slatted sides, and, if exposed to storms, such a slant that the rain will not drive in. The old rail pen, narrower at the base than at the top, and well thatched, with straw or stalks, cures and keeps the corn as well as the most expensive corn house, and protects it quite securely from everything except vermin.

Plowing for Spring Crops.—This may be done at any time now, where the soil is not too light, and not likely to wash during the winter. The ground should be left rough to be subjected to the fullest action of the weather, freezing, thawing, wetting, drying, etc. Should a crop of weeds come up, it will very likely pay to harrow and plow again.

Ridge Plowing of stiff clays is often of great benefit. It is done by turning the furrows two and two together, so as to leave the land uniformly ridged. The ridges must run up and down the slopes; otherwise, in heavy rains, water will be held by the ridges until it breaks through somewhere, when there will be danger of a "wash-out." This system of winter fallowing involves plowing again in the spring, but shows its good effects in the crops.

Water.—If pure water does not flow at the barn, look into means for securing it. Barn-yard wells are convenient, but often dangerous to the health, if not of animals, certainly of men, who may drink at them. If the water from some spring can be led to the house and barn, by all means bring it down—use plain iron pipes or enamelled ones—not "galvanized" pipes. Zinc is a slow poison, but not quite so bad as lead. A well on higher ground will often furnish flowing water, conducted by a siphon, at the level of the buildings. No well should be dug at a less distance than 300 feet from a barn-yard, cesspool, or privy vault.

Buildings.—This month offers the most favorable time usually for the painting and repair of farm buildings, and putting them in order for the winter. A great part of this work may be well done during this month by the farmer and his boys.

Implements, put away for the winter, should be painted or protected in some way from the action of the air and moisture. Paint or varnish for the wood-work, and a varnish of two-thirds rosin and one-third mutton tallow is excellent for protecting iron and steel.

Live Stock.—A little extra feed brings cattle and horses to the beginning of winter in good order. The tops of carrots, beets, and turnips may be fed to good advantage, and there is a great deal of sweetness in the October pasturage. Where much corn is planted, there will always be soft ears and "nubbins" which are best fed to horses and pigs.

Swine.—Pigs will fatten nearly as fast on potatoes this month as on corn next. They do best on cooked feed, and the grain ought to be ground.

Sheep.—This month we speak for March lambs. Half-fed sheep are often run into market from sections where food is scarce, and it pays well to secure such to feed for the winter, turning them off fat in the spring. The feeder should be satisfied if, by so doing, he works up his wheat straw and corn into manure, getting pay for his grain and cash outlay, and that only.

Poultry.—Early fattened poultry bring more money if marketed in October, and early in November, than at Thanksgiving and Christmas time. Thy fatten much easier, also, at this time, for it is not so cold, and they get more forage in the fields.

Notes on Orchard and Garden Work.

The present month may be said to close the season in the Orchard and Garden, and it offers an opportunity for looking back over the successes and failures of the busy growing months that are past. This is a time when the lesson to be drawn from the past may be a guide and an inspiration for the future. In the retrospect it may be found that the failure in one place was due to imperfect preparation of the soil; in another the soil was not good, and not infrequently the soil and the seed being of the best, the young plants were neglected and the crop was rank weeds instead of a paying one. The "bad luck" of the season may be due to imperfect drainage, and if so, the gardener should begin at once to remedy the difficulty. This is one of the best of the months for making drains, and having decided to improve the soil in this way, push the work in a thorough manner to completion. This is a favorable month for all labor requiring the removal of earth, and such work as the making of roads in the orchards, grading, etc., can be better done now than in the busy days of spring.

Orchard and Nursery.

Apples.—The practice of picking the fruit and putting it in heaps for a few days until the skin toughens, before barrelling, is a good one. Put the fruit into the barrel with care, shaking it down when half full, and again when full, so that the apples will fit closely when the head is pressed in by means of the barrelling press. The opposite head should be marked as the one to be opened. This season of abundant apples it will not pay to market any except the best fruit, and that in fine shape. Dry second-rate fruit or make it into

Cider.—The best cider is made from late ripening, sound fruit, and in cool weather when the fermentation is gradual. Many early apples may be worked up into sweet cider and sold as such or made into vinegar. This is one of the best methods of turning to account fruit that would otherwise be lost.

Vinegar.—The essentials for good vinegar are: good cider; a temperature of at least 70°, and as complete exposure to the atmosphere as possible. The process may be hastened by adding yeast to the cider, or "mother" from old vinegar barrels, which amounts to the same thing. Vinegar making is therefore a sort of fermentation, facilitated by a low microscopic plant of the fungus group.

Pomace from the cider press is of no great value either as a food for stock or as a manure to the land. Pigs will eat it to some extent. It should be put in the manure heap, as when left by itself in the open air it gives off a disagreeable odor.

Fruit Cellars should be in readiness, but the fruit should be kept under sheds, etc, until cold weather comes, being careful to remove it to the cellar before being exposed to severe cold. The fruit cellars should be provided with ventilators so arranged that they can be readily thrown open.

Heeling-In.—When the orchardist purchases his young trees in the fall they should be heeled-in, which, when properly done, consists in burying the roots in a place where they will keep in good order until ready to set out in the spring. The usual method is to open a trench—lay the trees in a slanting position and fill with earth. If set upright the trees are more exposed to the weather; but are less apt to be injured by mice. No unfilled places should be left about the roots; finish off with patting the surface of the soil down firmly with the back of the spade. Look well to the labels, and leave no litter near the trenches to harbor mice.

Sundry Matters.—Recently planted trees should have a conical mound of earth around them to protect from mice and act as a stay for the tree against winds. .Top-dress the orchard with fine manure ....Repair fences and gates, put away the tools in in good shape, and do the many odd jobs that will help so much when the busy days of spring come.

The Fruit Garden.

Every farmer or owner of a good-sized village lot should have a separate plot of ground devoted to small fruits. Now is a good time to decide upon this matter, and begin to have a Fruit Garden. The soil should be well drained, and if not rich, made so by an abundant supply of manure, which is best plowed under and the soil left rough until spring.

Strawberries.—If planting is done now it is pleasanter than in the spring, as the soil is in a better condition, besides it will relieve the pressure of spring work. There is no gain in the time of fruiting by planting now, unless the plants are pot-grown and are set out without any disturbance to the roots. When the ground begins to freeze the bed should be covered with litter, marsh hay, straw, etc., putting it only slightly over the plants, that they may not be smothered. In setting, fifteen inches between the rows will be the distance most suitable for working a narrow cultivator among the plants. Exercise care in selecting good sorts.

Blackberries.—It is best to set them in the fall, as they start so early in the spring, placing the plants 6 to 8 feet apart. The Snyder is coming into favor.

Raspberries should also be put out in the fall, for the same reason as for blackberries mentioned above. Set the plants in rows about 4 by 4 feet.

Grapes.—The grape-shears should be used in picking, as it allows the bunch to be cut without handling to deface the bloom. The Concord, and similar thin-skinned varieties will keep but a short time. The Catawba, Isabella, Diana, and other thick-skinned varieties may, with care in packing, be kept until midwinter. Grapes should be picked in shallow trays, and left in a cool room for a few days, for the skin to toughen, then pack in 3 to 5-pound boxes, filling from the bottom, and tacking it on with slight pressure. Label the opposite side which will be the one to be opened. The vines should be pruned so soon as the leaves have fallen.

Kitchen and Market Garden.

The principal work of the month, in this department, will be caring for the crops that are stored, and preparing for the early spring crops. All rubbish should be cleared up and the ground manured and plowed to aid in the spring work.

Cold Frames should be made for cabbages, lettuce, etc. Light and dry soil in a sheltered place should be chosen. A rich soil is not demanded, as the plants are to be simply protected, not grown, during the winter. The object of cold frames is to protect plants that would otherwise be killed by the frequent changes of the weather—not to grow them. If the frames are to be used afterwards for growing plants, then a rich soil is required. A plank of about 12 inches wide makes the rear of the frame, and one 8 inches high does for the front, and far enough apart to hold the sashes by their ends. Two strips should pass from front to rear, where two sashes meet, for them to slide upon. The sashes should not be put on until the weather requires it. In the South, ridges of earth running east and west serve the same purpose, and take the place of cold frames in the colder regions of the northern States.

Roots.—Parsnips and Salsify improve by being frozen. Beets and carrots are injured, and should be dug before the freezing weather sets in. A supply for table use may be packed in dry earth, in boxes or barrels, and put in the cellar — the rest should go into the root-cellar or pits. The filling up of the cellar of the dwelling with various kinds of roots, fruits, etc., is objectionable, as foul gases are continually rising through the house and making the air impure.

Pits must be made where it is dry and water will not stand on the bottom. The most convenient form is a trench 3 or 4 feet deep, and 6 feet wide, and as long as needed. The roots may be put in sections with a cross wall of earth between each. In this way a portion of the roots may be taken out without disturbing the rest of the pit.

Asparagus.—The tops should be cut and burned, and a dressing of coarse manure applied to the bed.

Beans.—Lift the Limas, poles and all, at the first frost, and put them under a shed where they may be kept fresh for some time. The ripe pods should be gathered and shelled for winter use.

Beets should be dug before the frosts, and stored in pits. The tops may be fed to the cows.

Cabbage.—Gather before the frosts come, and put them in pits or trenches. Cabbages set with heads down and covered with earth, will keep well.

Carrots, like beets, should be dug before the frosts come, and stored in root-cellars or pits.

Celery not yet earthed up should be attended to. First bring the leaves together, and draw the earth to them with the hand, to hold them in an upright position. A portion for early use may be banked up now to the top of the leaf-stalks.

Lettuce.—Sow in cold frame for early spring use.

Onions.—If sown in the fall the young plants must be covered with litter to keep the frost from heaving them out of the ground.

Parsnips.—Dig enough for present use and store in the cellar, and leave the rest in the ground, where the frost will sweeten and improve them.

Spinach.—Thin as required for use, giving the plants to be wintered a plenty of room. Keep clean of weeds to insure a good crop.

Squashes.—Gather before the frost injures them, and handle carefully to avoid bruising. Use the least ripe first, and store the others in a cool place.

Sweet Potatoes should be dug so soon as the leaves are injured, and placed where it is warm and dry.

Tomatoes.—When danger from light frosts is apprehended, the season may be prolonged by protecting the plants, or some of them, by cloths or papers. Some pull up their vines and hang them up in sheds, etc., for the same purpose. Secure the green tomatoes in sufficient quantities for spiced and other pickles, before the frost injures them.

Flower Garden and Lawn.

A mistake is made by many in ceasing to care for the Flower Garden as soon as the first frosts come, as they thereby deprive themselves of some weeks of enjoyment. In the climate of New York City, late September or early October usually brings frosts that are heavy enough to demoralize the Coleuses, and like tender plants, while the more robust ones, Geraniums, etc., are but slightly injured. After a few mornings of these early frosts, it often happens that there is a whole month of good weather, which is the finest of the year. Let the delicate plants go and give all the more care to those that may be saved with a little pains taken in protecting them. The tender plants that have been killed by the frosts should be removed at once.

Dahlias are spoiled by the first hard frost. Cut the stalks near the ground and lift the roots, selecting a warm day, and doing the work in the morning that the roots may dry all day in the sun before putting them away. Be sure to securely label the different varieties, and put them away in a cellar that is suitable for keeping potatoes.

Cannas.—The roots should be dug before the foliage is killed by the frosts, otherwise it will be difficult to keep them through the winter. It is better to lose a little of the beauty by early digging than to have the roots injured. The roots must not be allowed to wither before putting them in a dry warm place for the winter.

Chrysanthemums that are to flower in-doors should be potted at once. Those that are to bloom in the borders should be tied up and kept in good shape.

Spring Bulbs should be planted as soon as they can be obtained from the dealers. Double Tulips are very showy, and are deserving of more attention than they receive. The beds for the bulbs should be enriched with old well-rotted manure.

Tender Bulbs, like Tiger-flowers, Gladioluses, etc., must be lifted before the ground freezes, and stored in a cool place. Tuberoses yet to bloom may be lifted and put into boxes of earth and placed in the greenhouse or a sunny window.

Straw and Leaves make an excellent covering to plants of doubtful hardiness. Such a protection will cause a stronger bloom in the spring and make the grounds look neater for raking up of the leaves.

Walks.—This is a good time to make or improve the walks. A thoroughly-made walk is a permanent improvement, and is the only kind that pays in the long run, to make anywhere on the ground.

Finally.—Do everything that in any way prepares for winter, or will aid in the busy spring.

Greenhouse and Window Plants.

The greenhouse before this should have been put in readiness, that there may be no delay in bringing in the plants when the time comes. Soil, labels, moss, pots, and all other needed articles should be on hand ready for use, and in sufficient quantity.

Bulbs for flowering in pots should be potted as soon as obtained; the soil should be rich, made loose with a plenty of clean sand, after which the pots and plants may be placed in a cool and dark cellar to form a good growth of roots.

Window Plants.—The necessity of a gradual change must be emphasized in removing plants from the open air to the dwelling rooms. It is best to place the plants in a room where there is no fire, and one that can be opened during the day. After a while the plants may be taken to the close living-room, in which there is a fire.

Hardy Plants can be forced in window culture, and deserve more attention than they have received. Among these are *Dicentra* (Bleeding Heart), *Astilbe Japonica*, Lily of the Valley. All such should be taken up at once and potted, and kept in a pit or cellar until late in January or February, or later; when brought out for bloom, they should at first receive water rather sparingly.

Seeds of Annuals may be sown; Candytuft, Sweet Alyssum, and Mignonette, and other pretty annuals are always in demand for cut-flowers.

Hanging Baskets, made up with new plants, should be well watered and kept in the shade for a few days. Do not place them in the confined air of heated living-rooms until too cold to remain outside.

Bee Notes for October.

BY L. C. ROOT.

THE HONEY CROP.—The yield of honey from Basswood and other sources, in this section, has not equalled our expectations. During the last days of June the supply of honey, from basswood, promised to be abundant, but it was very suddenly and unexpectedly cut short. Reports from all parts of the United States indicate a small crop. We judge it to be less than one-half the usual average; many report an entire failure. In our own apiaries we secure over 15,000 pounds from 176 colonies. Thus far we have taken from the three selected swarms as follows: July 10th, No. 1, 77½ lbs., No. 2, 66½ lbs., No. 3, 83¼ lbs.; July 13th, No. 1, 41 lbs., No. 2, 41 lbs., No. 3, 55 lbs.; July 19th, No. 1, 12 lbs., No. 2. 18 lbs., No. 3, 21 lbs. After the last date given we removed the swarms, with others, to where Buckwheat, Golden Rod, and Eupatorium are found in greater abundance than around the summer stands nearer home.

FALL PASTURAGE.—The subject of fall pasturage is of considerable importance, as with a fair yield of honey at this season, breeding will be continued, and thus one of the essentials for successful wintering is secured. It will therefore be found profitable to study the sources from which a yield may be expected. In many sections buckwheat is the chief dependence for late honey. In other localities, like our own in the Mohawk Valley, Melilot or Sweet Clover, shown in fig. 1, is of great importance. But more generally, we think that the supply will be gathered chiefly from Golden Rod, fig. 2, and Eupatorium, shown in fig. 3. These wild plants can be found upon rough waste land, in nearly all parts of the country.

Fig. 1.—MELILOT OR SWEET CLOVER.

FALL MANAGEMENT.—If surplus boxes have not been removed as directed last month, it should be attended to at once. If swarms have been supplied with extra combs for extracting, they should be removed and packed safely away for use another season. The value of these combs, as well as those taken from piece boxes, cannot

Fig. 2.—THE COMMON GOLDEN ROD.

be over-estimated, consequently great care should be taken to preserve them. Mice and rats should be carefully excluded. If disturbed by the destructive moth, the removed combs should be smoked with brimstone.

An error appear in Notes for September, which might mislead the uninformed. It should read, "the combs should be watched, and not, "the combs in the brood-nest should be watched." There is no danger of combs in the brood-nest of good swarms being injured by the moth, at this season, and if weak ones were disturbed, it would be necessary to examine them and remove the moth larvæ, as by smoking with brimstone, the brood of the bees would also be destroyed. When boxes and extra combs are removed, close all upward and downward ventilation, and if the entrance is too large, make it smaller. This will aid in keeping the hive warm, and facilitate continued breeding.

Fig. 3.—THE EUPATORIUM.

MARKETING HONEY.—In marketing honey use every precaution to make it neat and attractive. Directions for preparing and casing honey for market, will be found in the *American Agriculturist* for October, 1879.

QUESTIONS AND ANSWERS.

HANGING AND STANDING FRAMES.—"Do you not crush more bees, and are you not more liable to kill the queen with the Quinby standing frame, than with the hanging frame?"—We consider the standing frame quite as desirable, yet we, as well as others, in answering such questions, should not lose sight of the fact, that every bee-keeper becomes most familiar with whatever style of hive he adopts, and, naturally, can handle it better than any other, until he acquires a large experience.

OPENING HIVES.—"How often should a beginner open his hives?"—Just as often as practical operations require him to do so.

BEES IN A GARRET.—A correspondent in N. J. comes with the old question of the desirability of keeping bees in a garret. This story of arranging bees in a room in a garret where they will not swarm, and where the owner can go and cut out cards of honey for family use, at any time, is a very old one, and belongs with that other old story of the immense swarm of bees somewhere in the rocks, where bees pour forth in masses, and honey may

be found by the ton. As regards keeping bees in an attic or upper room, or even upon a roof, they may be so kept, if some practical hive is properly arranged in such a location. There are even some advantages derived, where but few hives are kept. But all things taken into consideration, it is preferable to have the bees placed somewhere near the ground.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Text-Book on Agriculture Wanted.

The impression is gaining ground among thoughtful persons, that children who are to become farmers should have a primary education that will fit them for their future occupation, as much as those who are to become merchants, bankers, etc., and that the public schools should teach the principles of agriculture as well as those of business life. In view of a probable demand for such a work, the Orange Judd Company offer **A Prize of One Hundred Dollars** for the manuscript of the best elementary work that will give children an idea of the principles underlying the practice of Agriculture that is suited to the United States. The work should be adapted to the capacities of children of the age of fifteen and over, and must not exceed 200 12mo. pages. The work should give the best practice in agriculture, and the reasons for the same so plainly that they may be understood by youth, without requiring a knowledge of chemistry, and, so far as possible, avoiding the use of technical language. Manuscripts should be designated by some name or mark, and be accompanied by the real name in a sealed envelope ; they should be presented on or before January 31st, 1881. If, in the opinion of the Judges, none of the manuscripts offered are deserving of the reward, the offer will be renewed; the successful manuscript to be the property of the Orange Judd Co.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the *only* ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price; and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy information* to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

The Fairs, Complimentary Tickets, etc.—One of the laws of Natural Philosophy is, that a body cannot be in two places at the same time, and with this law in action we are forced to decline a majority of the invitations. It is with regret that we realize the impossibility of attending many of these useful exhibitions, as we always feel well paid in old friendships renewed, information gained, etc. To all who have sent us premium lists, tickets, and extended other courtesies, we tender our hearty thanks, and hope that every fair, State, County, District, and Town, may be a perfect success. A list of the October Fairs is given on page 447.

Death of Albert J. Meyer.—Brigadier General A. J. Meyer, Chief Signal Officer United States Army, and widely and familiarly known as "Old Probabilities," died at Buffalo, August 24. While on duty as an assistant surgeon in the army on the Texan frontier, where a broad level plain and clear atmosphere offered superior facilities for signaling by vision, Dr. Meyer's attention was drawn to the possible advantages that might result from a system of night signals in army and even navy operations. As the result of his study and investigation he published in 1858 his "Manual of Signals for the United States Army and Navy." Dr. Meyer was soon appointed Chief Signal Officer (1860), and became actively engaged in developing a special signal service for the army. His service during the war was of great importance. An instance of this was the saving of Allatoona, Ga., in 1864, by bringing troops by signals in time to relieve the post, the message being sent over the heads of the surrounding enemy. After the war General Meyer was largely instrumental in establishing telegraphic communications with military posts on the frontier, 5,000 miles of telegraph lines having been built under his supervision. By act of Congress in the spring of 1870, he was charged with the important duty of developing a national system of meteorological observations, and the success of the system, which was developed with remarkable rapidity under his admirable management, has led to a uniform international system of simultaneous meteorological observations over a large part of the northern hemisphere. The work which "Old Probabilities" has so thoroughly pushed forward must be of lasting benefit to all classes of people, but to none more than to the farmers, who may well feel grateful to General Meyer for his services, and only wish he had been spared for a longer life of usefulness among his fellow men.

Charles L. Flint, Resigned.—Mr. Flint, who from the first has filled the position of Secretary of the Massachusetts State Board of Agriculture, has resigned, and Mr. John E. Russell, of Leicester, has been elected in his place. Mr. Flint has long been the main spring and balance wheel of Massachusetts agricultural work, and it is fitting that he should have rest from the routine of official work, which he has done with such credit to himself, the State, and all concerned in agriculture.

Windmills for Thrashing.—"O. V.," Montgomery County, Pa.—The very large windmills have power enough for thrashing, and when they are needed for other purposes on the farm might be used economically for this purpose, and are doubtless occasionally so used.

Advantages of Draining.—The intelligent farmer understands very well the importance of removing the excess of water from his soil. It makes the soil warmer; the sun's heat falling on a wet soil is used up in changing the water into vapor, and does not warm the plant as it otherwise would. Drainage allows a free access of air through the soil, an important condition of the best growth of agricultural plants. A longer season is also given—the drained land can often be worked considerably earlier in spring and also later in the fall.

Society for the Promotion of Agricultural Science.

During the meeting of the American Pomological Society, held at Rochester in 1879, a number of gentlemen met in consultation over the needs of better farming, and to devise means for extending the Science of Agriculture. "They recognized the need of an educated public sentiment in order to secure progress in agricultural pursuits, and were aware that the hope of agricultural progress was in enlisting the efforts and the sympathy of the intellectual classes." A preliminary association was formed, the prime object of which, as stated in the call, "shall be the promotion of Agriculture by fostering investigation in science applied to Agriculture."

At the recent meeting of the American Association for the Advancement of Science, in Boston, a number of the same gentlemen, with others specially interested in the promotion of Agriculture, met together, and, after deliberating upon the plans that had been proposed by various gentlemen, formed themselves into the "Society for the Promotion of Agricultural Science." The organization at present is a provisional one, and assumes much the nature of the "Entomological Club," in being made up largely of members of the A. A. A. S., and will meet on stated days in the same city, and at the same time as the American Association for the Advancement of Science. It is the intention of this new Society to limit its number to 40 or 50 members, and hopes it may make its influence felt, and in time come to be regarded as an authority in the field of Agriculture, as does the National Academy of Sciences in its special domain.

Among the members present were Prof. G. C. Caldwell, of Cornell University; Prof. M. C. Fernald, Maine State Agricultural College; Profs. R. C. Kedzie, W. J. Beal, and A. J. Cook, of Michigan Agricultural College; Dr. A. R. LeDoux, formerly in charge of the Agricultural Experiment Station, North Carolina; Dr. W. G. Farlow, of Harvard University; Dr. E. Lewis Sturtevant, and others. The new Society has the hearty co-operation of Profs. S. W. Johnson and W. H. Brewer, of Yale College; J. J. Thomas, Patrick Barry, L. B. Arnold, and other scientific men who have deep sympathies in advanced agriculture. Prof. W. J. Beal was chosen President, and Dr. E. Lewis Sturtevant, Secretary. These gentlemen, with Prof. G. C. Caldwell, form a committee to develop plans of work, etc. Assuming little, in a quiet, inobtrusive way, this small band of earnest workers may do much in the field of practical, progressive, and intellectual agriculture.

The Long Year.

Read This.—Fourteen Months.

All **New** *Subscribers for* 1881, *whose subscriptions come to hand during* **this month (October)**, *will receive the American Agriculturist for November and December of this year without extra charge.*

The above applies to **All** *new subscribers, from whatever source received—including Premium Clubs.*

Those too distant to receive this number before **October 31**, *will be allowed* 10 *days after its reception in due course of mail, to take advantage of the above in presenting the paper to their friends.*

The Premium List.

September Supplement.

The Supplement of last month's paper should be preserved for reference by all who received it, as a descriptive list of good Articles and choice Books, all useful. There is hardly a family in the whole country that does not desire and *need* one or more of these articles as a premium, or by purchase.

There is not a town or neighborhood in all the country where one or more persons of a little enterprise, may not secure one, two, or three of these excellent premium articles without money outlay, and at the same time confer a real benefit upon every person they shall gather into a premium list of subscribers, and readers. It only needs the will—the determination—to do it, and it will be accomplished.

THIS MONTH is a good time for the work. Remember *that all* new names for 1881, received in this month of October, are entered at once to receive the paper for November and December without extra charge. This applies to all new subscribers, including premium lists.

☞ **N. B.**—Premium lists containing two or more names, may be made up of both *new* subscribers, and *old* ones renewing for another year. For other particulars, see **Premium List** in Supplement of the September *American Agriculturist.* Any one not having received it, will be supplied on application.

Tenant Farming Again.

The able remarks about Tenant Farming in the August number of the *American Agriculturist* attracted my attention, and, as it so well accorded with my own views, I thought I would give you my ideas of the cause of failure of agreements between landlord and tenant. I am a tenant farmer, and I frequently hear intelligent people talking about the rescue of certain lands from the "careless hands of tenants." I also see occasional articles to the same effect; but, as you say, why have not these things a remedy? and if so, why has the remedy not been applied? There are many tenants, who have the right kind of landlords, that do succeed, and their landlords find a handsome return for all they invest on their farms; but I regret to say that such is not generally the case. The tenant system of farming in this country is generally defective, but that it is all the fault of the tenants is not true. No doubt there are careless tenants as well as careless men engaged in anything else, but an individual class should not shoulder all the blame, when the defect is from general causes. Tenant farmers are, as a rule, men of ordinary intelligence and moderate desires, and generally disposed to act fairly and honestly towards the owners of land, but when they find no disposition on the owners' part to help shoulder the burdens, they are apt to try and make it as light as possible for themselves, and where one landlord does not please, another is looked for. Therefore, to be brief, I would say that the root of the evil lies in *short leases*, when, under a better understanding, we might have our differences adjusted without changing landlords. The cause, I think, of short leases is generally a want of confidence in each other. Many owners of land get good tenants, but the reputed carelessness causes distrust, and that distrust often engenders selfishness. The tenant has but a short lease, and cannot afford to put on more than he expects to get off the land, for he may have to leave at the end of the year, and let some one else reap the benefit of his labor; whereas, had he the assurance of a longer tenure, he might go on improving, with proper assistance from the owner, from year to year, feeling that he was not only working for the benefit of the landlord, but that he was doing the best for himself at the same time. In changing, the landlord often gets a worse tenant, and the tenant a worse landlord, and both are dissatisfied.

I am on a small farm, and know I could do better on a larger one, but, because of the bad system of farming here, and more especially the bad tenant arrangements, I shall be careful how I change, as I might do worse. In this section the landlords do not like to do anything for their lands, except to be sure that the tenants sow and reap, and the tenants try to sow as little as possible for the owners' benefit. This is all wrong, and there is no real reason for it. Let the owners of land make up their minds to have longer leases and better tenants, and do what they ought for their lands, not expecting tenants to do all, and be assured that it will not be long before the discord and carelessness of to-day will be forgotten. I admit that the present state of affairs has gone on so long that, like all other evils, it will have to be gradually rooted out, as no arbitrary or forced measures would ever be able to eradicate it. "TENANT," Talbot Co., Md.

Spring and Fall Pigs.—Pigs littered in the fall or early winter, owing to the cold weather, lack of green food, etc., seldom make a good start, and in many cases are eaten so soon as dropped by their voracious dams. Pigs for the greatest profit should come about the opening of spring, with its fresh grass and warm sunshine; they can then be ready for the market by fall, and very few risks will be run. For this end sows should be bred in December or January. At one time large hogs were highly prized in the market, but now smaller ones are in demand, and such pork can be produced at less expense per pound than that of large hogs. Young hogs are the most profitable, born in spring and marketed in the fall.

White or Yellow Corn for Feeding.—"N. W. Y.," Hunterdon County, N. J. After studying all the analyses of corn we have access to, we cannot find that color is an indication of quality which can be depended upon at all. The Flint corns, however, have a slightly higher average value than the Dent corns.

Whey: How to Use it.—Whey is milk minus the cheese that has been removed. As cheese is the most highly nitrogenous portion of the milk, it follows that whey is comparatively weak in these important albuminous food elements. Milk being a perfect food, whey is a liquid lacking in nitrogen to make it complete as a food. In feeding whey to the best advantage this loss of nitrogen should be made good—as far as such a loss can be made good—by using some substance rich in the element in conjunction with the whey. This may be linseed meal, oatmeal, wheat middlings, or some such like substance. Whey thus supplemented will be found to be an excellent food for calves or pigs. For young pigs—shoats—such a mixture gives very excellent returns, the food seeming to furnish all the elements necessary for the best growth of the animal. The great objection to whey has come from feeding it alone, and especially when its sugar had turned to acid by long standing.

Apple Pudding.—"After what is said in March No., 1880, about apple dumplings, I would like to say, we make apple puddings that "grandmother appears to like as well as the dumplings she used to make," and *pater familias*, who is authority on this question, fears no consequent danger to the digestion, the only objection being the crust will allow of all the good cream you choose to put on it. I use a gallon milk pan similar to fig. 3, page 184 of *American Agriculturist* for May. It should be heated gradually and a little ashes put on the stove to prevent breaking. Work some good butter in sufficient light dough (yeast bread, no lard or soda) to make a cake nearly as large as the pan, and one inch thick. Set it where it will rise. Fill the pan half full of apples, pared and cut in eighths. Add water to cook them and set on the stove. Lay over them the cake, which should be quite light and gashed. Cover tightly. If the apples cook quickly it will be done in half an hour. Turn quickly on a large plate—sugar and cream." *

Sundry Humbugs.

Medical matters have always formed a large share of the contents of our humbug column, for the reason that we look upon fraud in medicine, as one of the most pernicious. Among the most dangerous of medical humbugs, are those who pretend to be regularly educated practitioners. The absolute quack will, by his pretensions, disgust intelligent persons, but where one professes to be a regularly educated physician, and to have a diploma, there is no method by which one can readily satisfy himself that the so-called physician has a right to his claims. It is unfortunately the fact, that a number of persons who have attended medical lectures and have, perhaps, even graduated, should, failing to become established as regular physicians, fall into the practice and way of quacks and become venders of nostrums and practitioners of some *Pathy* or other. These persons have a regular issued diploma, and we have at present no law which can deprive them of it. Besides these, there is another class who have diplomas, who have not gone through the trouble of studying or even attending lectures. For a long time it has been known that medical diplomas could be purchased for a moderate sum. In Europe it is vastly more difficult for one to obtain a medical diploma, than it is in this country, and the fact that an American diploma will allow one to practice in Europe has given encouragement to this sale of false diplomas. In this country one can, in most medical colleges, procure a diploma after two years of study, but this is not the case in Europe. Five years at the least, are required, and the examinations there are vastly more severe than in our colleges. In view of the higher standing of physicians in Europe, and the greater difficulty in becoming qualified to practice, many pretenders there have availed themselves of the opportunity to purchase diplomas which have been offered by a pretended medical college in Philadelphia. The Philadelphia newspapers, especially the "Record," which deserves a great deal of credit, have taken the matter in hand, and fully investigated the sale of bogus medical diplomas. It was found that a young man with sufficient money, could be made a full-fledged doctor and receive his diploma with as much Latin in it as in a regular one, in about twenty-four hours. It appears that one Buchanan was the chief operator in this diploma mill. He had associates, but they appear to have played a subordinate part. After much investigation and accumulation of evidence, this Doctor Buchanan was arrested, but before his case came to trial he is supposed to have committed suicide by jumping from a steamer. But even in his death (?) as in life, he practised deceit, for now it appears that Dr. Buchanan did not kill himself, nor did any one commit suicide, but an expert swimmer, hired for the purpose of representing Dr. Buchanan, pretended to destroy himself. It is estimated that thousands of these diplomas have been sold, each serving as a black flag to some piratical chap who is preying upon the health and pockets of the community.

While it is gratifying to know that this diploma mill has been closed, the fact that it could have gone on successfully for so long a time, shows that our laws in such matters are not so strict as they should be. Indeed the sale of false diplomas might have continued for a long time to come, had not the number of American diplomas, in possession of foreigners, aroused the attention of European authorities and the matter was made a subject of complaint to our Ministers abroad who communicated the facts to our own government. It would be better for the health of the community were the laws regulating the practice of medicine and the sale of drugs vastly more stringent than they are at present. Indeed in some States there can scarcely be said to be any laws on the subject. While the possession of a diploma is not absolute evidence of skill on the part of its possessor, yet it shows that the holder has had opportunities to qualify himself to practice medicine; while the possession of one of these bogus documents merely shows that a man had money enough to purchase it.

HUMBUG LAWYERS.

There are some lawyers who are in very small business, and we would suggest to one in particular who is engaged in writing threatening letters in behalf of a quack medicine vender, that he must be careful not to write anything that he wouldn't like to see in print. We do not know that we can prevent his writing such letters, but we can shame him out of it by publishing some of them. He had better take this as a warning.

GAMBLING IN WHEAT.

Since the closing up of the swindling stock broker establishments, other ways of speculation appear to have been found. The desire to engage in a game of chance (the spirit of gambling) appears to be more general than people are aware of. Lotteries, though positively forbidden by law, flourish in all our cities, there being a large portion of the community who are not only not opposed to them, but who participate and take the chances in them. Indeed it seems very difficult to control this matter by law, there being so many ways to evade what appears to be very strict legislation. In a New England town a local law was very strict for the suppression of gambling of all kinds. The various games by which the people had been accustomed to gamble, being enumerated in the law. It was supposed that every known game was prohibited, but one day two men were seen at a table each with a dollar bill in front of him, and upon each bill was a lump of sugar. The owner of the lump of sugar upon which a fly first lighted, won the game and took both bills.

When stock gambling was suppressed, other methods of speculation appeared. Operators, even if not the same, evidently of the same class as the "Put and Call" brokers, are now sending their circulars over the country giving people an opportunity to bet upon the price of cotton and of grain and other commodities.

Look out for the New York Seed Company, a name taken by one of these speculating concerns. They send out blanks which allow one to bet upon the price of wheat at some future day. One of our friends who received a blank of this kind, writes to us in astonishment that the parties do not state what variety of wheat the Seed Company propose to deal in. There is no danger that any one will get taken in by these wheat and cotton speculators, who does not really desire to gamble in this manner.

PEDDLING CLOCKS.

The business of peddling clocks did not die out with Sam Slick. Clock peddlers are said to be especially numerous in some of the Southern States. One of Sam Slick's methods was to ask to be allowed to leave a clock until he came that way again. Sam had an acute knowledge of human nature; he knew that if persons once became accustomed to the clock, they would not readily part with it, and whenever he received permission to leave a clock, he was very sure that he had made a sale. When he came around after a few months, it was very rare indeed that he would be allowed to take the clock away.

The clock peddlers of the present day, however, leave the clock, but at the same time take a note for two or three times the real worth of the time-piece. Trouble has already come from some of these clock trades, especially in States in which the law on the collection of notes is very stringent. Those who follow our repeated advice, to give no note whatever to an unknown person for any article whatever, or under any possible circumstances, will avoid all difficulty. One can now buy a good clock very cheaply, and there is no need of purchasing one that cost more than a few dollars, or more than can be readily paid for at once.

VETERINARY QUACKERY.

There is not only quackery in regular medicine, but also in the treatment of animals. One of our subscribers sends us a circular which purports to come from the Veterinary University of Medicine in New York City. There is no such university in New York City and the so-called Professor is very careful not to give the street upon which that remarkable institution is located. The title shows ignorance in the use of language, and his circular indicates that the "Professor" and English gram-

mar are not on very intimate terms. The "Professor's" circular is ornamented by what we take to be his portrait, and it also has, as a trade mark, a pig with a very lively curl to his tail.

Regular veterinary practitioners, as well as other practitioners, do not advertise proprietary or secret medicines of any kind, nor do they avoid giving their location. At the bottom of this circular we read "Patented June 11th, 1878." What is patented, whether the portrait of the "Professor," or the circular, or the curl in the tail of the trade mark, we are unable to state; but it is a very pretty circular.

VALUABLE REAL ESTATE.

What is the use of having a gold mine while common dirt will bring $10 a pound. This is Real Estate worth having—worth more than corner lots even. But this valuable soil is away off in Brazoric County, Texas. The writer has been through Brazoric County, but he was not aware of the value of the earth upon which he trod. This earth is not thus valuable for building upon, but it is claimed to be a sure cure for scrofula, neuralgia, and all the rest of it. This earth does not appear to be applied after the manner of the true mud cure, in which the patient is plunged up to his ears and left to soak; it is too valuable to be used in that way, but you take only a small spoonful of it and put it in a pint of water, and let it soak for ten hours, and then you take a teaspoonful three times a day and—it will do you just as much good as if you hadn't taken it. There can be no doubt that the fellow who offers it for sale makes a pretty good thing of it. He knew human nature well enough to put the earth at a good price; had it been $10 a cart-load, who would have cared to have taken it in teaspoonful doses? It seems there can hardly be anything so absurd but it will find people to take and believe in it. We always did have a good opinion of Texas, and now that we know that at least a portion of it is worth $10 a pound, we think more than ever of that beautiful State.

PLANT PEDDLERS OR NURSERY AGENTS.

With the autumn days come the Plant Peddler or Nursery Agent. One of these fellows with a glib tongue, a fast horse, or a highly varnished buggy, comes into a town, takes perhaps hundreds of dollars' worth of orders, and after he has done all the mischief he can, some good person will sit down and write us about it, asking if such a man is likely to do what he professes, and various other questions that would be very properly put before the orders had been given; but after the Agent has taken the orders it will be a very difficult matter for them to refuse to take the goods. However rascally such a man may be, it is hardly possible to prove it until the trees and plants come into bearing, and here is where these chaps have the advantage. They cannot be found out in most cases under several years, by which time they will have gone to some far off State and will be beyond reach. A little common sense would be a very convenient thing to have to use in these cases. If a man claims to be an agent of such and such a nursery, he will have proper credentials, and, if he is honest, he will be willing to substantiate his claims. If, however, he has no credentials it is very unwise to order of such a man, unless it is known that the trees, etc., will come from a nursery of good reputation; and it is very easy to ascertain this by writing to the nursery and making inquiry.

But why the majority of those who buy of such persons do not deal directly with the nursery, is a matter that we are quite unable to understand. If trees are ordered from a well-known nursery, and in the course of time proved to be not true to their names, one knows where to look for redress. Accidents may occur in even the best nurseries, and an honorable business man would make all the reparation possible should it be found that in fact trees were not as represented. These travelling chaps sometimes profess to sell fruits which have no real existence, or they describe well-known fruits in a manner which the facts will not warrant.

RUSSIAN APPLES.

For example, from Arkansas a man has been selling Russian Apples, claiming that they are imported from Russia and are better than others in every respect. Now there are Russian apples, and in far Northern localities some of them have proved of great value. As a general thing they are small and in some cases are not of high quality. But they are a great deal better than no apples, and our advice is always to plant the best that the climate will bring to perfection. Now, in Arkansas they have no more need of Russian apples than they have of snow-shoes, because these apples have no quality that make them especially desirable in a climate so mild as that of Arkansas. Then the agent had the Monarch of the West strawberry, which he describes as being unlike others, standing upright and the fruit never getting on the ground; all of which is simply nonsense. The Monarch of the West in some localities is a very good fruit, and in others a rather indifferent one; but it don't stand up high, and it does get on the ground. It seems that this man sold his stock much higher than it is quoted in the nursery catalogues. It may be well, as those who bought of him are learning a valuable lesson, that they should pay something for their schooling. Our Arkansas correspondent winds up his letter with "Do you think he is a humbug?" Most decidedly we do.

How to Dispose of Raw Bones.—"J. H. J.," Mason County, Mich.—When bones can be ground of course they are made rapidly available as plant food, but at a distance of four miles they may gradually be made useful thus: Sledge up the bones as much as you can, and mix them with good active horse manure, two-thirds manure and one-third bones. The pile should then be covered with three or four inches of earth. It will heat, and when the heat has subsided the bones will be found very much softer. Shovel it over, throw out the big bones, and all that will break up, hammer again and compost them still further. Make a fresh pile of bones and manure, and throw in the hard cases of the former heap. Thus the bones will gradually yield to the ameliorating and persuasive influences of the compost heap. The outside layer of earth will prevent loss of ammonia during the fermentation of the heap.

Tomatoes in Glass Jars.—"R. T. R.," Henry Co., Ind., writes: "I cook the tomatoes until the froth, which always rises when they first come to a boil, disappears, or about as much as if getting ready for table; then put them in glass jars like any other fruit—taking care to have the mouth of the jar perfectly dry, and the sealing wax not too brittle. Much of the sealing wax sold in sticks ready for use, needs a little beeswax melted with it, otherwise, when cold, it does not adhere to the jar, and the failure of fruit to keep is laid to other causes."

Nutriment in Fruit.—The mind grasps values by comparison. The chemist tells us that an egg weighing an ounce and a half is equivalent in food material to 17 ounces of cherries, or 22 oz. of grapes, 30 oz. of strawberries, 40 oz. of apples, 64 oz. of pears. We thus see that fruits are not very solid food. But we do not think any the less of cherries, apples, and pears, because they are not as concentrated in nutritive elements as the egg. They are no less a part of the best food of the human race, and most persons will continue to eat them.

Crystals of Sugar.—"E. C.," a subscriber in British Honduras, sends, by the hand of a friend, a sample of beautiful clear sugar crystals or "rock candy." "Not," as he says, "such as we usually make. They were taken from a tin of sugar which was run off for syrup from a pan before it came to the point when we make sugar." Any moderately strong solution of sugar—or syrup—will thus crystalize on cooling and standing. The slower the crystallization goes on the larger and clearer will be the crystals. This is an old process for obtaining refined sugar of the highest purity.

Sowing Oats with Wheat.—The theory is that when wheat is sown late, and not likely to make a stand sufficient to protect a light soil from wind and washing, a few oats—say a bushel or a bushel and a half to the acre—sown with it, by starting quicker and making more growth, will form a covering to the soil, which will hold the snow, prevent blowing and injurious washing, and die in the course of the winter and then form a useful mulch and manure for the wheat. Mr. O. Voightlander, of Montgomery County, Pa., kindly reminds us that on such soil as his, a clay or clay loam, the growth of the oats may be so rampant as to smother the wheat. This we do not doubt, and wheat on such land would be least likely to be benefited by the oats.

Confining Blackberry Roots.—Miss "G.," Riley County, Kan. Such a cement wall as you make for a cistern, three feet deep, will keep your blackberry roots thoroughly within bounds, unless the wall is torn to pieces by the frost. This may probably be prevented by clearing away the earth on each side of the wall and laying boards a foot wide on each side, edgeways, alongside the wall and in contact with it, the upper edges of the boards being put below the surface of the ground. The boards will be moved and the wall remain firm.

Jerusalem Artichokes for Cows.—"C. S.," Tuckerton, Pa., writes that an acre of Jerusalem Artichokes with an average yield of 1,200 bushels will afford enough nourishment to sustain two cows, and with less labor than is employed in raising an acre of potatoes. "Pound for pound, they are equal in nutritive qualities to potatoes .. Since these roots do not keep over summer, and as the cow will not thrive on them alone, it is necessary to supplement them with dry fodder during winter and to subsist her on other forage during summer. With the aid of this plant, three-quarters of an acre of land under high cultivation will nourish a cow during the whole year, and the soil will become rich without any other manure than that derived from the cow."—The roots of the artichoke should be planted in hills, three feet apart each way, and cultivated frequently to keep the soil in good tilth and free from weeds. A tuber, or piece of tuber the size of a hen's egg, is sufficient for each hill, it being covered two or three inches. The plants will grow until frost kills the stalks. When fresh the whole plant, root, stalk, and leaves, may be fed to the cow. In winter she will need about a bushel of the raw tubers a day, with eight or ten pounds of hay. Artichokes can be fed from the 1st of October to the beginning of June, during which time 250 bushels will be consumed by each cow, together with about a ton of hay. "A good way to keep Jerusalem Artichokes in winter is to place them on the ground in the field in shallow layers, covering them lightly with the stalks of the artichoke or with straw, and then with a little earth. If the rain wets them it will not injure them."

What to Do with Apple Pomace.—The best disposition to be made of the pomace from a cider press is to encourage its decay as rapidly as possible, by adding it in thin layers to a compost heap; placing it in immediate contact with either animal manure, lime, or ashes. It may be utilized, or at least disposed of with some prospect of its being useful, by knocking it into pieces and shoveling it, a hundred weight at a time, into the pigsty. Thus it disappears and is returned to the earth for all it is worth—which is not a great deal.

Swamp Muck.—"W. L.," of Essex County, N. Y., writes: "I have read the article on 'Swamp Muck—Its Value,' on page 340 of September No. of the *American Agriculturist*. I have a three-acre bed of muck, six to ten feet in depth. Averaging it eight feet, and calling twenty-seven cubic feet a load, it figures up 38,352 loads. This muck is pronounced superior to any known in Essex County. This is the starting point. Now, I have already in my barn-yard some twenty-five loads. I have drawn out and piled up about 180 loads. I have a seven-acre meadow that is to be turned over for corn next year. I have this muck, and at my command lime, salt, ashes, and plaster. What is the combination to be made?"—As soon as the muck is reasonably dry lay a mass of it about a foot deep, six feet wide, and as long as you please upon a dry and convenient place. Cover this with lime slaked with strong brine, to a dry powder, using enough to make the entire mass perfectly white. Cover this with four to six inches of muck, which lime again in the same way, and so on—each layer will be narrower than the first, so that it will hold its form. Thus, when three feet high, it will be about three feet wide on the top. The rain will not hurt it. It should be examined after about a month and worked over, making a new heap as close as possible to the first, and adding more or less lime in the same manner as before. Such muck will be in excellent shape in March or April to apply directly to the land, or to compost again with animal manure or anything of a fermenting nature, and will, when this undergoes heating in the spring, be excellent for manuring corn in the hill.

Weeds.—"If weeds are left exposed in piles a year, will their seeds germinate?" asks a correspondent.—Certainly; and some of them probably after ten years, if there were ripe seeds in the pile to start with.

Composting is the art of mixing organic matter, such as straw, muck, dead animals, etc., that must undergo decomposition before they become available as plant food, with inorganic matter that will absorb and retain the valuable gases that the organic matter would otherwise let pass into the air and thus be lost. Such a mixture must be kept moist, but not exposed to rains that would wash away the valuable soluble salts. Stable manure and muck make an excellent basis for a compost heap, with which ashes, leached and fresh lime, weeds (not in seed), waste matters, etc., can be mixed.

Cochineal in Florida.—The Cochineal Insect, a sort of plant louse, which abounds on certain species of cacti, and with the bodies of which a beautiful scarlet dye is made, and from which carmine is extracted, is said to do well in Southern Florida, though its native country is Mexico and the Northern States of South America. This being a fact, as stated by a Florida paper, it would seem worth while for enterprising people in Southern Florida to look into this matter.

Plant Economy.—Plants, like animals, can live on inferior food, but where it is abundant will select the best. Where food is lacking in quantity plants will contract their growth and devote all the food that is possible to the production of the offspring—the seed. It is a well known fact that anything which checks the growth of the plant tends to make it flower first, and if possible produce seed. It seems as if the plant realizes that its own life is in danger and takes the shortest cut to the reproduction of its kind; and in so doing often pinches itself and is very economical for the sake of future generations.

Dr. George Thurber, so long and widely known in connection with the editorial management of this Journal, and Dr. Manly Miles, in charge of the extensive *American Agriculturist's* Experimental Farm, sailed for Europe, Sept. 2d. These gentlemen are to visit the various Experimental Stations in Germany, France, and England, and will likewise devote time and attention to other places of special importance to all interested in progressive agriculture. Our readers will be fortunate in having the full results of their extensive observations and researches in the future numbers of the *Agriculturist.*

The American Institute Fair is one of the "institutions" of New York City. "New Yorkers" think a great deal of it. They take their families, and their country cousins, and they do what they can to make it worthy of the "Empire State," and of the business "Metropolis" of this Yankee Nation. The Fair was nominally opened on the 15th of last month, and by the first of October it will be in its full glory. The exhibition will be a very attractive one, and it will be a pleasant object to have in view for persons or parties coming to town before the close, which is on the 27th of November.

Roup: What Is It?—The disease of fowls, and especially young fowls, called Roup, is most prevalent during the late fall and early winter months, and has its origin in colds which the birds contract at this time. If not attended to the cold increases, the head swells, and a watery substance is discharged from the eyes, which in time may coat over and close them. The roof of the mouth and the tongue are similarly affected. As soon as the fowl is seen to be troubled with a cold, it should be given some meal mixed with Castor Oil, and its head bathed with a weak solution of Carbolic Acid—a few drops of the acid in a basin of water. If the disease is already somewhat advanced, a pill of Sulphur and Cream of Tartar (equal parts) should be given. The sick birds should be put by themselves and their throats and heads bathed frequently in a solution of Chlorate of Potash. The "ounce of prevention" that is worth so much is good management—good clean coops, roosts, fresh air, and pure water and food.

Pampas Grass Plumes.—These plumes, some fine specimens of which have been sent us from Florida, are the ripened flower clusters of the *Gynerium argenteum* (a native of South America), a grass which grows in the South, and also to perfection in California. Nothing is nicer for room decoration than a fine cluster of these soft plumes, silky and white, twenty inches to two feet in length. They can be found in seed stores often colored blue, green, yellow, red, etc., but the natural subdued color is most pleasing to many.

Lice on Stock.—A number of letters ask for remedies for lousy stock. Vermin of some kind very frequently infest domestic animals; they are mostly of the louse type: small parasitic animals that must be removed by the application of some insecticide. A number of substances have been used to a greater or less extent, of which a few are mentioned below: One pound of Tobacco and six ounces of Borax boiled in two quarts of Water, to which Soft Soap enough is added to make a thick paste, has proved a good vermin salve. A mixture of Carbolic Acid and Soft Soap in the proportion of one to four makes a compound easy to apply, and very effectual. Shortly after, the parts to which the soap mixture has been applied should be washed with pure water and a non-drying oil rubbed on. Oil of Turpentine and Lard Oil, equal parts, with a little Carbolic Acid, is perhaps the most convenient mixture to make, and effectual in its application. Animals that are affected with vermin need better care and higher feeding in order to overcome the drain that those parasites make upon the system.

Quality vs. Quantity.—It begins to look as if we had reached that point when *quality* in the products of the farm, orchard, and garden, is to take the front rank, and quantity become a second consideration. It is not so much the large strawberry or squash, or the number of quarts of milk, as the flavor, the richness, etc., that is being sought. This is encouraging.

English Emigrant Colonies.—Three years ago some gentlemen in Boston formed a Board for the encouragement of emigration from the populous centers of Europe to the fertile unoccupied lands in the West and South. Members of this board made a number of excursions to the Western States, in 1878, and finally selected a tract of land on the Cumberland Plateau in Tennessee. At the same time an English Board, organized for a similar purpose, was also making inquiries, and soon the Boston Board and the English Board were amalgamated; the English becoming the leading spirit in the enterprise. From the time of the selection of the 400,000 acres, in Tennessee, two years ago, until now the work of the colossal enterprise has been necessarily slow. Mr. Thos. Hughes, the celebrated English writer, and familiarly known author of "Tom Brown's School Days at Rugby," is now in this country in the interest of this colonization scheme in Tennessee. The scheme can be viewed only as an experiment at present—the method proposed seems the best one for meeting many of the great difficulties with which agricultural life is generally associated in a new country. A hundred families purchase a fine tract of land at a low price. They unite in their numbers old and young of both sexes, persons of various trades and accomplishments, and begin work on the frontier, with many of the comforts of civilized life, the church, school, social gatherings, etc. Colonization of this kind will succeed, provided there is a strong bond of sympathy which holds the associated life together as a unit. A religion in common effected this in the Puritan colonies; and the Moravians are united in settlements all over the world, by ties that have all the indications of being enduring. If no bond of unity survives the passage of the sea, disappointed ones will soon begin to drop away, and the colony will break to pieces, but with the feeling that they can be more prosperous and happier together than separated, it will survive until the people are thoroughly naturalized, and the colony will continually increase by fresh immigration. The situation in Tennessee is well chosen, being attractive both as to climate and soil. We wish them every success, and hope soon to have a full and encouraging report from Mr. Hughes of his work.

(*Basket Items continued on page 445.*)

The Guinea Grass, "Johnson Grass," Etc.

(*Sorghum halepense.*)

BY HERBERT POST.

I send you herewith an account of the "Johnson Grass" which is attracting the attention of farmers in various parts of the United States. It is not, as many are led to believe, a new grass, but it is only of late years that its value has been known or acknowledged. I have for five years past been cutting it and shipping as hay, and experience more than confirms the first expectations I had of its value. In the markets where it is sold it is preferred to the best Timothy hay, being more succulent and nutritious. The most reliable history I can obtain is as follows: In 1835, Governor Means, of South Carolina, obtained from Turkey some seeds of a grass, there known as "Guinea Grass." After growing it on his plantation it became known as "Means' Grass," by which it is still called in that State.

About 1845 William Johnson, of this place, being in South Carolina, obtained some of the "Means Grass" seed and sowed it upon his farm, where it now grows with great luxuriance. Here it obtained the name of "Johnson Grass," by which it is now most commonly known. It is a member of the Sorghum group, as its botanical name—*Sorghum halepense*—indicates. It is perennial, and propagated from both seeds and roots, the latter very much resemble those of the sugar cane; is very nutritious and eagerly sought after by stock of all kinds. It starts early in the spring and continues growing until frost kills it. In consequence of the deep penetrating roots, it withstands the drouth better than any of the other grasses, remaining green when other kinds are burned out by the hot weather. The richest bottom lands yield from one to two and a-half tons per acre at each cutting, and is cut two or three times each year. With the attention given to fertilizing in the Northern States, I doubt not its yield could be increased 50 per cent. per annum. For stock not at work it furnishes abundant food in grazing. Mr. N. B. Moore, of Augusta, Ga., after a trial of the various grasses for forty years, selected this grass as the best he could find. He planted one hundred acres of it, which yielded him a handsome income annually (Howard says $7,000 to $10,000). People who know the value of grasses no doubt wonder why this grass has not been more generally raised if so valuable. The simple reason is, Southern people have from time immemorial been taught to destroy grass; and every thing else that interferes with cotton must give way. While a grass possessing great tenacity, it is easily destroyed by plowing up and exposing its roots to the hot suns of August and September.

One bushel to the acre will give a good seeding. Sown in September or October, it will produce two good cuttings the following year. It is also sown in the spring, but of course does not get as good a start. In the North the spring would probably be the best time to sow. It should be sown the same as other grass seeds, and brushed in or covered with a roller.

[This grass was described and illustrated in the *American Agriculturist* for March, 1877, in which it was stated that the Guinea Grass is found in Southern Europe, East Indies, Cape of Good Hope, West Indies, Australia, and Brazil. In September, 1879, this same grass was again treated under the name "The West India Green Valley Grass," with which the seed of the *Sorghum halepense* was advertised for sale through the Northern States.—EDS.]

Preparing and Seeding Ground for Meadow.

The practice of sowing grass and clover alone without any so-called foster crop is becoming general. It is found that the supposed nursing crop has quite a different effect from fostering or encouraging the tender grass, but chiefly robs and destroys it, unless the soil is unusually rich. The more successful practice is to prepare the soil by thorough plowing—rolling if necessary, and harrowing so as to procure a fine tilth, and sow the seed early in the spring, without any accompanying crop. The preparation of the soil in the spring is completed by a dressing of fine manure, and a thorough harrowing, a shallow plowing being given if necessary. Harrowing will be sufficient in the majority of cases. After a fine harrowing the seed is sown. A mixture will be found most satisfactory. Mixed crops, as a rule, yield in proportion to the increase of seed. Thus a usual seeding of Timothy or Clover, or both, will give a certain quantity of hay; if Orchard-Grass is added, a crop of hay will be taken equal in amount to that expected from the Timothy or Clover, but two or three weeks earlier. A second crop may be taken later, of which the Timothy will furnish the bulk, and the Orchard-Grass will fill up the bottom. If Kentucky Blue Grass is added, or Rhode Island Bent, a later crop will be given, which can be mowed for rowen, or will give the best of fall pasture without injury to the roots of the Timothy or Orchard-Grass. The mixture here indicated is one that may be suggested for trial. It has been tried and found successful and desirable in all cases, and deserves a more extended application. The seed has been sown in the following proportions: One bushel of Orchard-Grass, one-half bushel of Kentucky Blue Grass, one-half bushel of Rhode Island Bent, ten pounds of Timothy, and six pounds of Red Clover. The Blue Grass appears later than the others, and fills up the vacant spaces left by the falling clover, which disappears after the second year. The advantage of the mixture is chiefly that a fine thick bottom is produced, which covers and protects the ground between the stools of the coarser grasses, and which furnishes a second crop for hay and a third for pasture. For soiling purposes the mixed seeding is even more useful than for pasturage, as the grass may be cut at any season without danger of injury from a dry spell. These particulars are more pertinent for the spring than the present season, yet if one would avail himself of them he must make preparation now, and not delay.

The Chinch-Bug in Winter.—Professor Cyrus Thomas, of the United States Entomological Commission, has made an exhaustive report upon the Chinch-bug, which gives some useful facts concerning its winter habits. Insects may pass the winter either in the egg, the "worm" or larva, the pupa, or as the full-grown, perfect insect. The chinch-bug adopts the last as its winter state. "When cold weather comes on those of the fall brood leave the now dry and hardened corn-stalks, and seek secure places in which to remain during the winter. Occasionally they take flight at the time, but usually they seek the most secure places which can be found in and immediately around the field. Any rubbish left in the field, if of a nature to meet their wants, is eagerly sought; corn shocks, straw piles, stumps, logs, and fence rows are used as hiding-places; they even conceal beneath the

clods when no better places can be found." Many go into the forest and along the bush-bordered streams. "During the winter they remain in a torpid or semi-torpid state, but are easily warmed into life and activity. As the cold weather becomes more and more severe they press deeper and deeper, if possible, into the recesses of their hiding-places. They prefer dry quarters if readily obtained."

There are two broods of this injurious insect during the season. The perfect insect comes forth in spring (March to May), deposits its eggs, which soon hatch and pass through the stages of development, to in turn lay their eggs, which produce the fall brood to hibernate until spring again.

Weeds: Two Troublesome Daisies.

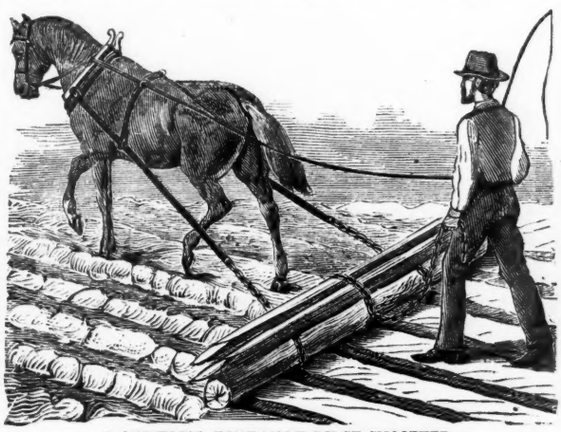
The Ox-Eye Daisy (*Leucanthemum vulgare*) and the Small White Daisy (*Erigeron strigosum*) are troublesome weeds. These plants, known by different popular names, are somewhat similar, the latter, however, having smaller flowers, and being annual or biennial, while the former has much larger flowers and is a perennial. The Ox-Eye Daisy is, therefore, the most difficult to get rid of, as cutting before the seed is ripe is not sufficient. These weeds are rapidly spreading over the whole country, and scarcely a farm is to be found free from them. They are mown with the hay, and the seeds are thus carried far and wide to new fields and fresh pastures. When Timothy is cut for seed these weeds are gathered with it and thus too the seed is sown in new places. Something should be done to destroy these pests. Early mowing of the meadows will destroy the small daisy, as the root will die the second year at least; but the Ox-Eye Daisy, as it is perennial, cannot thus be killed out. This can only be done by cultivation, and care to avoid using hay from infested fields, or foul grass seed. To cut the weed after the blossoms have formed, in the hope of preventing the seeds from ripening, will be futile. The seed will mature after the plant is cut, if the flower has been fully expanded, and hay that has been mown early to escape mixing of the seed of the daisy, will, after all, be infested. The plan most likely to be successful, is, to seed down with a mixture of Orchard-Grass and Clover; this is ready to cut in May or June before the daisies have prepared to blossom, and the flower stalks being cut off, a new growth must be made. This will frequently happen, however, but as a second cutting is usually made of the Orchard-Grass, this may still be taken before the second growth of the daisies can show itself in flower. In this way these weeds, of both kinds, may be brought into subjection. Otherwise a succession of cultivated crops for three or four years, should be grown, and every daisy that escapes the cultivator should be pulled. It may be thought that this is too laborious and expensive to pay. But the loss sustained year after year, and the damage done to the meadows and pastures by these weeds is considerable, enough to warrant some expense and a good deal of labor to eradicate them. A farm cannot be kept clear of them, if hay or seed is brought from land that is infested. Buy only pure hay and clean seed.

A Ridge Smoother.

A correspondent who raises every year a good many roots, and whose practice has been to manure in the drill and cover with the plow, by ridging up over the manure and sowing the seed upon the ridges, first flattening them by a light roller, writes to the *American Agriculturist* that he has, or thinks he has, found a better way.

The roller was out of order and so he attached the trace chains, about six feet apart, to a 12-foot stick about 6 to 8 inches in diameter, in the way shown in the accompanying engraving. When fastened so wide apart the draft is much steadier than if attached nearer together. The stick not being quite heavy enough, he added two fence rails, fastening them on by a chain near the middle. A bundle of four or five fence rails would doubtless do equally well. The weight of the smoother should depend upon the hight of the ridges and the stiffness of the soil. The laborer carries the end of the middle chain in his hand, and with it guides the smoother, or lifts it if it becomes clogged or drags along weeds or sods. In turning also at the end of the drills, he lifts the implement by pulling back upon the chain. The action is very different from that of a roller; instead of flattening it smooths, and if sods or stones lay upon the ridges they are shoved off and not crowded into the drill, to be in the way of the seed sower.

For the best use of such a smoother, the land should be reasonably clear of large stones. It has one decided advantage over the roller, in that



A ONE-HORSE HOME-MADE RIDGE SMOOTHER.

grass sods, and many weeds, are not pressed and settled into the ground, to start up at the first rain, but are swept off into the hollows between the ridges, where they do little harm and the cultivator will strike them the first time it is used.

Yellows in Peaches.

From the number and character of the letters that are coming to us, it is evident that, in some regions, this has been a very destructive year to the peach trees on account of the prevalence of the "yellows." A communication now before us is from "E. H. C.," St. Joe, Michigan, in which it says: "This vicinity has been a great peach region. The 'yellows' began here about ten years ago, and has swept every tree from existence. It is now claimed that the business (of peach-growing) is being restored in New Jersey, where the 'yellows' prevailed a few years since. It is the topic for discussion at our next meeting," etc.

A recent letter from one of the leading peach-growers in Delaware, informs us that there has not been much trouble in that section from the "yellows" for a number of years. But what is the "yellows?" This question is so frequently asked that we wish it could be answered beyond a shadow of doubt. The "yellows" has been claimed by some to be of fungus origin, while others class it among those deranged states of plants not caused, as far as is known, by either fungi or insects. In order to find out more concerning the nature of this destructive disease, we have spent considerable time in examining the diseased parts with the compound microscope. In this examination, which included all parts of affected trees; the leaf, stem, fruit, root, etc., no traces of fungus could be found. This, of course, is by no means conclusive that the trouble is not caused by fungus, but it leads one to believe that if the "yellows" is caused by a fungus, it is probably one of those minute kinds like that of the yeast plant. Recent investigations upon the Pear Blight indicate that it may be caused by a fungus so small as to require the higher powers of the microscope to see it—that it can be artificially propagated on healthy pear trees by a process of inoculation, etc. It may be that the "yellows" comes in the same category. It is certainly contagious, as has been proven beyond a doubt, and though not so sudden in its action as the Pear Blight, is, as many in the Michigan Peach Belt and other localities can testify, as destructive in the end.

Our Apples in Sweden.

Dr. Eneroth, of Stockholm, has sent us a copy of his *Svensk Pomologi*, Volumes I. and II., bound in one octavo volume. This "Pomology of Sweden" is a capital book. We feel that the letter-press is worthy of the figures, and these we see are excellent, both the wood-cuts and the chromo-lithographs. They represent to the life the apples, pears, plums, and some of the small fruits of cultivation in that country, where, in the northern part especially, the length of the summer days makes amends for the shortness of the season. Dr. Eneroth also sends a recent appendix, entitled, when put into English, "Contributions to the Pomma of Europe at its Northern Limit." It will be interesting to know the capabilities of our American apples in this respect, so we have abstracted the following results of their culture for several seasons in latitude 59°, or thereabouts, which parallel, in our country, is about the middle of Hudson's Bay:

The BALDWIN appears to have failed altogether, and while beautiful exteriorly, is small, and the flesh is hard and dry, and does not come into eating until March. Not worthy of cultivation.

CANADA RED.—This is found to be an excellent keeper, and in quality is regarded as a rival of the Ribston Pippin.

The MCCLELLAN apple, thus far, gives promise of being a very useful variety.

COX'S ORANGE PIPPIN.—This unites high character with great beauty, and is regarded by Dr. Eneroth as one of the finest varieties of apple of which he has any knowledge, and he thinks that it will be cultivated everywhere in Sweden where fruit cultivation is at all possible. It keeps until April, when it is as good as in January.

NEWTOWN PIPPIN.—This seems to sustain its high character there, and, grown on espalier, has produced fruit of uncommon size.

The EARLY STRAWBERRY also appears to be well suited for Switzerland, and the SWAAR promises to be there, as it is with us, an apple of high character and of great value. A. G.

Bare Pastures in Autumn.

Why should meadows and pastures be brown and bare late in summer and in the autumn? Lawns can be kept green, and grass plots for late soiling may be made to yield a good cutting in October, "brown October," as it has been called. The reason is that we deal more liberally with our lawns and soiling plots; it is not that we do not cut them close, for no grass land is cut closer than a well-kept lawn. It is not the climate either which we have been so ready to blame for our brown and dry fields, but something in our management. The fact is, we do not give our grass lands a chance to do the best they can. As we write we look out upon a grass field which has been cut the third time, but which has been top-dressed after the first cutting; and another beside it which has been pastured since it was cut in June. The former is in complete verdure, and the ground is thickly covered; the latter is a miserable exhibition of bare brown spots, interspersed with masses of ragweed, left uneaten by the cows; a fair representative of the majority of meadows and pastures. When we have learned that it is possible to make more profit from an acre of grass, than from an acre of any other crop, we shall do justice to it and treat our meadows liberally. Just now it is very important to consider what this treatment shall be. A coarse, tufty growth should not be left on the surface, which dies but does not rot, and is in the way of the mower next season; but this cannot now be removed by pasturing, which would only leave it in patches, nor by mowing, which would be

a costly way of getting rid of it, unless it is considered that the advantage would over-ride the expense. Perhaps to mow over such a surface, and leave the cuttings on the ground as a mulch and a fertilizer, might be a cheap way of disposing of it. But the most helpful thing to do, is to give a fair top-dressing of manure, fine and well rotted, before the winter. This will be well washed into the soil to nourish the roots, so that an early and rapid growth will be made in the spring, after a smoothing harrow has been run over the surface to break up any lumps that may remain. This early growth is the greatest advantage, because the crop being cut before the usual dry weather occurs, a second growth begins immediately, and is ready to cut very soon after the usual first cutting would have been made under other circumstances. During the hot, dry season, the soil is well shaded and protected, and the roots are uninjured, and when the second crop has been gathered, a third gets under way at once. This exacting treatment of course requires liberal return, and in this case the "liberal soul shall be made fat." In fact, niggardliness in the treatment of the soil is the worst economy; while liberality is returned many fold. This is especially true with regard to grass lands, which in America, on the average, can pasture one steer or cow, only, upon seven acres; while in England pastures that will fatten one bullock per acre are common.

The want of manure with which we should be so liberal is the great difficulty. But this may be managed by devoting one special compost heap for this purpose, and enriching this with the addition of bone dust, potash salts, gypsum, or phosphate of lime and wood ashes. If this is prepared in time for use in the fall, and a light dressing of nitrate of soda and gypsum, or grass fertilizer is given after the first cutting, there can be little doubt that the dry brown appearance of the fields will be changed to verdure, and the barns filled with a largely increased product.

A Cheap and Convenient Cow-Shed.

Mr. F. E. Gott, Spencerport, N. Y., favors us with a sketch and description of his combined cow-shed and pigpen. It consists of an open shed, with a box-pen for the cow one side, and the pigsty on the other. The whole shed being twenty

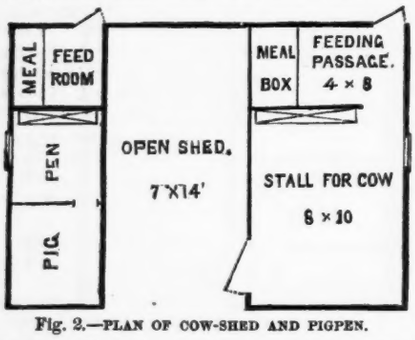


Fig. 2.—PLAN OF COW-SHED AND PIGPEN.

feet long and fourteen broad, covered by the same roof. It is constructed of hemlock lumber, and should not cost over fifty dollars. The outward appearance of the shed is shown in fig. 1. The posts in front are twelve feet in hight, and the rear ones eight. The boards are put on vertically, and battened on the sides. The roof is made of rough boards laid double, and breaking joints, so that it will not leak. The box for the cow is eight by ten feet, and six feet and four inches high, and has a feed passage four by eight feet adjoining it. The middle portion of the building is an open shed, seven by fourteen feet, and is used for storing muck, protecting the manure heap from the rains, etc. The pigpen occupies the left end of the building, and is separated from the central or shed portion by a low partition, while the cow-stall is boarded up to the roof. The floor, being six feet and ten inches from the ground, provides storage room between it and the roof in which to put hay. Mr. Gott suggests that it would be better to have the posts two feet higher, thus providing a loft in which over a ton of hay could be stored. The ground plan of this cheap and convenient building is shown in figure 2, giving the position of the doors, meal-boxes, open shed, feed-rooms, etc.

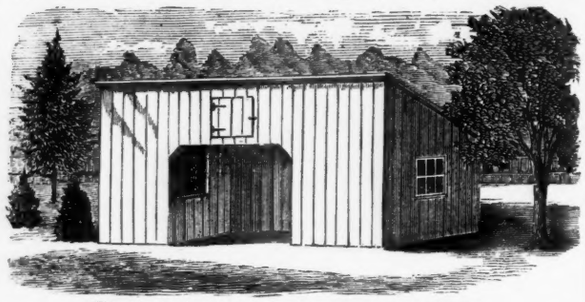


Fig. 1.—FRONT VIEW OF COW-SHED AND PIGPEN.

Editorial Correspondence.

Fargo, Dakota Territory.

Turn to the map of North America, follow a line west from the westerly point of Lake Superior some 254 miles and you are at this place, which, in reaching, we have travelled 1,661 miles by rail from New York. To many of our readers, unfamiliar with the country, this doubtless appears to be far into the cold, unhospitable regions of the north—a very wilderness. Yet here we are, in a hotel, as comfortable as almost any in the Metropolis, in the midst of a flourishing town of 3,000 people, where yesterday we visited churches and Sunday-schools that seemed no different from those enjoyed at home. So far as the people are concerned they appear as if one of our best New England or New York villages had been taken up bodily and transplanted here—people, houses, gardens (minus the fruit trees), etc.

Some Wheat Fields.

After arriving here, we made a circuit of about 40 miles in a southwesterly and westerly direction over the nearly level, treeless expanse, broken only by two large streams, termed the Cheyenne and Maple rivers, margin-lined with a small strip of low trees and shrubbery. Throughout nearly all this long ride our road was bounded by fields of waving grain, or those thickly studded with shocks just cut; and these fields stretched away on either side as far as the eye could reach. At one point was a single plot of wheat four miles long and one mile wide, that is, **2,560** acres all in one body, while only roadways or small plots of grass or oats separated this field from other extensive wheat fields on all sides. Being able to judge pretty accurately of the yield of ripened wheat, we estimate the product of these numberless acres at full 20 bushels of plump grain, some say 22 bushels for each acre—varying, however, from 15 to 30 bushels, though generally pretty uniform.

The Noted "Dalrymple Wheat Farms."

While there are many large wheat farms hereabouts, of 300, 500, 1,000 acres, and upward, and a multitude of others are being opened, a great deal has been said in the papers about the "Dalrymple Farm," the accounts, as we have seen them for two or three years back, varying greatly. We have, therefore, attempted to get at the real facts and for this purpose called upon Sheldon C. Dalrymple, who received us with characteristic western hospitality, and freely responded to our numerous queries. There are no less than nine farmers here bearing the name of Dalrymple, all related, and all originally from Warren County, Pa.—two of them, Oliver and S. C., having, on the way, occupied large farms in Minnesota for a few years. Most of them came here from two to five years since with scant if any ready means, or, as they express it, "with nothing but a 'Grip-sack' in their hands. But they are all now, we believe, the owners of what would be considered ample domains in old Pennsylvania.

Location of the Farms.

Standing at the Railway Station, some 18 miles west of Fargo, and 2 miles east of Castleton Depot, there is to the southward what is known as the "Alton Farm," extending say 4 miles north and south, and 3½ miles east and west, and containing about 9,000 acres. Of these 6,000 are now in wheat and oats, mainly wheat—here, as on other farms, oats enough being raised to feed the working animals. East of the Alton Farm is the "Cass Farm," extending some 4 miles along the south side of the railway, and southward about 2½ miles—containing about 6,500 acres, of which 5,000 are in grain this year. North of the railroad and opposite the Cass Farm, and part of the Alton Farm, is the "Cheney Farm," extending east and west some 5 miles, and northerly an average of 2 miles. This embraces 5,500 acres, with 4,000 acres now in grain. On account of the original ownership of only alternate sections by the railroad, and the settlement by others of some plots, as well as the successive purchase of various pieces, the farms are not entirely compact, but have irregular outlines with interjected plots of other owners. The "Alton Farm," so named from its Superintendent, Alton Dalrymple, for easy reference, is owned entirely by Oliver Dalrymple. The "Cheney Farm" was originally owned by Benj. P. Cheney, of Boston, Mass., and the "Cass Farm" by Geo. W. Cass, of Pittsburg, now of N. Y. City. Oliver Dalrymple took charge of these with certain facilities in the way of capital, to work them, and with the privilege of owning an undivided half, if in 10 years he should make *profit* enough to pay the original cost. Though the time has scarcely half elapsed, we understand this has been done and he is now the half owner outright. The other Messrs. Dalrymple own various plots, mainly located north, northwest, and northeast of the "Cheney Farm" as follows: S. N. Dalrymple (brother of Oliver), has 1,500 acres 5 miles north. S. C. Dalrymple, who manages the "Cass Farm," owns 2,500 acres, 2,000 now in grain, and managed by D. W. Dalrymple. O. C. Dalrymple owns 1,500 acres, 400 now in grain, but he manages the "Grandon Farm," noted below. C. G. Dalrymple owns 320 acres, 240 now in grain. W. C. Dalrymple owns 160 acres all now in grain. N. M. Dalrymple owns 320 acres, 160 now in grain, and superintends the "Watson Farm." D. W. Dalrymple owns 320 acres, 110 now in grain. Most of the Messrs. Dalrymple are young men, and while owning smaller farms are at the same time managers or clerks on other farms.

Oliver Dalrymple is General Superintendent not only of the "Alton," "Cass," and "Cheney" farms above noted, but also of the "Grandon Farm," situated in the Red River Valley, 35 miles north of Fargo, containing 45,000 acres, of which 7,000 acres are now in grain; also of the "Watson Farm" of 23,000 acres, a dozen miles or so south-east of the "Alton Farm." He is, we judge, a general adviser of operations on all the farms above referred to. He is the "General-in-Chief"—the "Veteran"—and is spoken of as the "old man," though only some 45 years old. The others hold various ranks or offices, and the whole farming operations are carried on with a sort of military, or rather a manufacturing system, with close connections, yet distinctive departments, from the largest to the smallest matters. For example, in a plot of 420 acres of ripe wheat, we saw a row of 16 self-binding reapers, each drawn by three horses abreast, or more mules than horses, marching in procession around the whole field at once, each machine taking off a strip 5 to 6 feet wide, and dropping the bundles at the side. If a machine got out of gear, it turned aside and the rest of the phalanx moved on. An expert, "Superintendent of Machines," on horseback, with a kit of tools, galloped to the "lame" implement, and generally soon had it repaired and in line again. Thus every round cut and bundled a strip 80 to 100 feet wide, and 250 acres were cut during the day. Another Superin-

tendent of "Shockers," with 20 to 30 men, followed the machines and put the bundles in shocks. In other fields similar gangs were at work, usually 12 to 16 machines. Some of the older and less perfect harvesters required an expert for every five or six implements. The 27,000 acres of wheat under the management of the Dalrymples, cut this year, required the use of about 150 of these self-binding harvesting machines to run for an average of about two weeks each. Imagine then 150 machines in a line of battle, some two miles in length, and you have an idea of harvesting by the wholesale in Dakota.

540,000 Bushels of Wheat.

As from our own estimate the entire 27,000 acres of the Messrs. Dalrymple will this year average at least 20 bushels per acre, the product will be full half a million, or 540,000 bushels—requiring 13,500 wagon loads of 40 bushels each to take it to the railway; and 2,160 freight cars, carrying 250 bushels each, to transport it to the distant market. These wagon loads in line, 50 feet each, would extend 120 miles; and the train of cars over 12 miles long, if each car occupies only 30 feet of track.

But this is only a small part of the wheat produced the present year in this immediate section. There are hundreds of other wheat farms ranging all the way from forty up to thousands of acres each, such as the "Sharon and Amenia Farm," 7 miles N E. of Castleton, containing 25,000 acres, just starting, but having 2,000 acres in harvest; the "Williams Farm" of 3,000 acres, 2,000 now in wheat; the "Hadwin Farm," 5 miles west of Castleton, of 5,000 acres, some 2,000 in harvest. (From this farm 1,280 acres were recently sold, with the crop on, for $33,000.) But

Men of Small Means

need not be set back by these large figures. We have seen plenty of men who came with only a few dollars and a team, and by breaking land for others and doing various jobs, then taking up land of their own and cultivating it, have gradually put themselves on the road to a competence. Some of these who preëmpted the alternate sections of Government land 5 years ago, at first lived in "sod cottages" or "dug-outs," are now possessors of farms worth $4,000 to $5,000 and upwards. There are now no such lands close to the railway to be preëmpted, but there are in counties north and south, and a little further west, where the railway has but recently extended. How good these lands are we shall know better when we see them a few days hence. There are some good railway lands still on sale at moderate prices we believe in the Red River Valley and on either side of it.

Briefs.

On the larger farms the threshing is mainly done by steam power, the portable engines and threshers being moved from place to place within easy hauling distance of the shocks. Jobbers also go from farm to farm with steam or horse-power threshers. ....As soon as the main harvesting and threshing is over, the teams start at once plowing the stubble, and before winter it is all ready for spring sowing, which begins here about April 1st....The straw is generally burned to get rid of it....In breaking the new prairie, "back-setting" is preferred; that is, the sod is turned about 3 inches deep from May 10th to July 1st; then beginning with that first broken it is plowed about two inches deeper, turning the sod under....Seeding is not done by drilling, but with the two or four-horse broadcast seeder....Oats are grown mainly for the home teams, the yield running from 40 to 70 bushels per acre....Corn grows fairly, but is not a certain crop....The Dalrymples estimate that it costs inside of 45 cents per bushel to produce wheat and put it upon the cars, reckoning all expenses except interest on cost on land, and they would contract to grow it for that. The average freight from here to New York, including storage, commission, and all charges, is estimated to average a trifle under 30 cents per bushel. We can therefore calculate that so long as wheat will bring 90 cents to $1.00 per bushel at the seaboard, it will pay well for producing it here....Fields that have been plowed one inch deeper each year have now produced continuous good crops of wheat for five successive years....Only spring wheat is grown here.

Why Crops Mature Far North.

People often wonder how it is that many crops grow and mature in the high latitudes, where the summers are of very brief duration.—The days are longer as we go towards the poles, until at latitude 68° the sun does not set at all for a brief period. Since the sun's light, as well as its heat, produces growth, the longer it is above the horizon the greater is the growth of plants per day. Thus, where the days average 21 hours of sun, there are, in 100 days, 2,100 hours of sunshine, while there are only 2,100 hours of sunshine in 140 days that have an average of only 15 hours of sunlight. As the isothermal (or equal-heat) line tends northwards after we pass westward of the south end of Lake Michigan, it is easy to understand why northern Dakota, Montana, Idaho, and Washington Territory, should be as favorable for farming, so far as climate is concerned, as some of the Eastern States lying much farther to the south.

Bismarck, Dakota Territory.

From Fargo to this place, 194 miles, we passed by rail over a woodless prairie, except along the streams, somewhat rolling, and of various quality as to fertility. There are numerous incipient towns at the Railway Stations, including quite a place at Jamestown, 101 miles this side of Fargo. There are here and there, all along the route, farms opened, and opening, by settlers. At several points fair crops of wheat are being harvested, and by careful selection multitudes can choose both railroad and government lands, that will fall little if any below those we have described, for wheat growing. Indeed the best wheat we have seen, taking the whole crop, is on the large Steele Farm, 40 miles east of Bismarck. We estimated the yield at 24 or 25 bushels per acre, at least, for all the fields in sight (28 bushels is claimed). Bismarck is a brisk growing town on the Missouri, already numbering 2,500 or more inhabitants, and promising to be an important future business center, as it already is on a small scale. The Northern Pacific Railway, which is being pushed through the Yellow Stone at the rate of one to two miles per day, is completed to a point one hundred miles west of Bismarck. At this point (Bismarck) we take steamer up the Missouri to visit some of the Indian Agencies at Fort Peck, etc. O. J.

Science Applied to Farming—LXI.

Our experimenters of last year gave us some interesting facts bearing upon the effects of different fertilizing materials upon the quality of the crops. From the full details published in the pamphlet reports I select the following:

"A number reported the amounts of 'good' and 'poor' corn; but fourteen, however, had made thoroughly accurate weighings The percentage of 'good' corn were as below:

NUMBER OF POUNDS OF "GOOD" CORN IN 100 POUNDS OF TOTAL CORN, WITH THE DIFFERENT FERTILIZERS.

NUMBER OF EXPERIMENT.	0 Nothing.	A. Nitrogen.	B. Phosphoric Acid.	C. Potash.	D. Nitrogen and Phosphoric Acid.	E. Nitrogen and Potash.	F. Phosphoric Acid and Potash.	G. Nitrogen, Phosphoric Acid, and Potash.	H. Plaster.	Farm Manures.
8	48	46	56	58	69	63	32	86	67	64
13	28	39	73	72	77	95	85	83	77	59
15	94	91	92	83	95	92	85	92	62	..
17	22	26	39	67	44	27	24	21	8	56
26	61	56	68	43	83	52	62	84	48	58
31	34	74	91	73	76	67	80	84	..	71
32	19	23	30	23	28	26	29	33	37	41
33	39	31	53	34	61	53	49	16	26	..
37	63	68	88	51	86	60	80	84	68	..
42	81	87	94	95	94	96	96	95	95	..
43	72	57	86	52	82	48	74	45	78	..
44	68	65	85	64	..	..	..	88	89	..
50	86	87	90	92	90	94	93	97	94	..
53	68	67	71	67	69	61	67	77	67	..
Average 14 Exp'ts, '79.	56	58	72	62	73	64	61	69	63	58
Average 14 Exp'ts, '78.	65	67	72	80	72	86	86	85	73	81

The figures accord with common experience that the largest crop has the largest proportion of good corn. I see nothing to account for the poorer average quality in 1879, except the bad season.

Ratio of Stalks to Shelled Corn.

The weighings of corn and stalks were made at different stages of dryness. In some cases the stalks were cut above the ears, in others close to the ground. The results are consequently discrepant. The averages are interesting as showing the relative effects of the fertilizing materials. The figures represent the number of pounds of stalks to 100 pounds of shelled corn in 12 experiments.

NUMBER OF POUNDS OF STALKS TO 100 POUNDS OF SHELLED CORN.

NUMBER OF EXPERIMENT.	0 Nothing.	A. Nitrogen.	B. Phosphoric Acid.	C. Potash.	D. Nitrogen and Phosphoric Acid.	E. Nitrogen and Potash.	F. Phosphoric Acid and Potash.	G. Nitrogen, Phosphoric Acid, and Potash.	H. Plaster.	Farm Manure.
3	374	625	262	487	383	491	320	375	497	...
8	124	94	107	104	70	109	138	89	117	152
15	100	113	205	335	122	166	307	195	429	..
16	281	190	164	154	137	132	136	70	271	66
17	304	228	156	174	145	226	155	144	422	131
26	108	281	140	321	86	272	192	139	93	128
31	146	134	91	110	110	139	175	152	...	157
34	72	95	75	75	85	98	89	97	95	83
37	184	186	135	218	140	216	155	165	186	...
42	98	92	90	104	95	97	98	89	96	103
45	...	66	96	79	72	74	69	72	77	76
52	158	104	163	191	110	254	141	151	188	140
Average 12 Exp'ts, '79.	149	156	120	168	105	162	141	124	219	115
Average 10 Exp'ts, '78.	173	143	149	145	129	176	128	131	189	133

The proportion of stalks to shelled corn is smaller in the larger crops, and conversely the poorer crops have more stalks for the same amount of corn than the better crops. Contrary to what is commonly supposed, the nitrogenous fertilizing materials do not seem to have increased the amount of stalks as compared with shelled corn. As to

The Effects of the Fertilizers on Quality of Other Crops,

there are but few reports. Several have spoken of the quality of the potatoes grown with chemicals as compared with farm manures. The nearly unanimous testimony is that the potatoes with artificial fertilizers were of finer quality, and less disposed to rot than with the farm manures. The very general good results from the use of potash salts with potatoes, makes it very desirable to know the effect of muriate of potash upon the quality of the produce. It is commonly stated that potatoes grown with the muriate (chloride), are less "mealy," and more inclined to be "soggy" than with the sulphate. Such reports as I have, however, represent the potatoes grown with the muriate as of entirely satisfactory quality. The sulphates are rather costly and variable in composition, while the muriate is reliable, and so concentrated and cheap as to be within the means of almost every one who has potatoes to grow. If it can be demonstrated to bring potatoes of good quality, it proves, and I certainly believe it will prove, of inestimable value for this purpose in all our older States.

A Word to this Season's Experimenters.

I have given the above notes of what our experimenters have been doing with a purpose. The blanks that are sent for reports of the experiments bear the motto: "*One great want of our Agriculture is closer study and observation by farmers.*" It is not merely the facts observed and reported, but the habit of accurate observation that will do good. To encourage this is one of the great objects for which the experiments have been planned. And so I trust the experimenters will pardon me if I repeat here the requests made in the directions and blanks, that they make full and accurate reports of the details of their experiments. We want to know not simply how the superphosphate and potash salts, farm manures, and other materials, compare in the different trials, but how the results are affected by the different circumstances of soil, previous treatment, methods of tillage, of application of the fertilizer and cultivation of the crop, weather, effects in succeeding seasons and succeeding crops, and so on. This collecting and comparing of the experiments of intelligent men under varying circumstances, is one of the ways in which great good can be got from Science applied to Farming.

W. O. ATWATER.

A Complete Cottage, Costing $1,100.

BY S. B. REED, ARCHITECT.

These plans are for an inexpensive seven-room dwelling, similar in character to those published in last month's *American Agriculturist*. Several of these cottages have been erected in the manufacturing districts of the Eastern States, where they are regarded with special favor. They are equally adapted to most other parts of the country, and will be found to be very convenient, and to contain sufficient room for a family of six persons. For economical reasons, but three rooms are usually

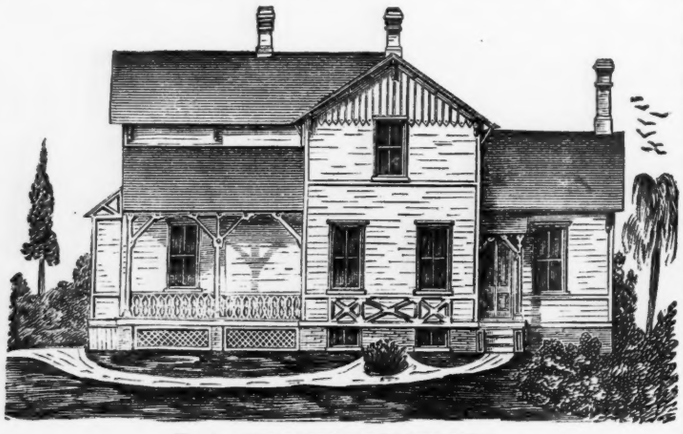


Fig. 1.—SIDE ELEVATION OF THE HOUSE.

appropriated to general use—a parlor, dining or sitting-room, and kitchen, the remainder being furnished as chambers. In such cases the apartment marked "Dining Room" on the plan is used as a bedroom, making four chambers in all, and increasing the real capacity of the house to accommodate a family of eight persons....**Exterior.**—Two elevations are given (figures 1 and 2). The foundations show 2½ feet above ground, a good hight for convenient entrances, besides giving opportunity for suitable outside windows from the cellar for light and ventilation. The outside openings and dressings are sufficiently varied to make the whole interesting and somewhat picturesque. The front entrance is of good width, and has a roof resting on chamfered columns and side railings of open work. A square-angled bay-window projects in front, with chamfered work, below the sashes. The cornices, gables, belt courses, etc., are tasteful

Fig. 2.—FRONT ELEVATION.

fully arranged, giving opportunity for the proper distribution of shades in painting....**Cellar**—It is of the size and shape of the main house section, as shown in fig. 4. Its hight is 6½ feet; it has an outside entrance under the stoop, and is lighted by three windows. The kitchen is supported by piers, and the spaces between are inclosed with boarding. .....**First Story** (fig. 3).—Hight of ceiling 9 feet. The front entrance opens from the veranda to a vestibule, and from it to the parlor and dining-room. The Parlor is pleasantly arranged with a bay-window in front, and single windows in two of its sides, giving views in three directions. The chimney is placed directly opposite the bay-window. Suitable spaces are allowed along the walls for the furniture usually required in such an apartment. The Sitting-room has windows in three of its sides, and doors leading to the dining-room, kitchen, and a closet. The Dining-room has two windows on one side and connects with the kitchen, two closets, and the cellar stairs. (Should this room be made a chamber, as before suggested, then the space under the main stairs may be used as a closet.) The Kitchen has three windows, with outlooks in two directions, an open fire-place, a sink, door leading to the outside rear stoop, and a kitchen pantry; the latter is of good size, has one window, and is thoroughly shelved. This "pantry" arrangement is a necessity in a New-England house, as in such an apartment their stores are kept and most of the pastry work and preparations of food for the table is done. On one side just below the window a broad shelf is placed, extending the whole length; underneath and attached to this shelf are three drawers, 5 inches deep and 18 inches wide, for towels and such things. The remaining space is left for barrels, pails, etc. Above this shelf at each side of the window and across both ends, shelves 10 inches wide, placed with convenient space between for crockery, spice-boxes, etc. On the door or opposite side, cleats and projecting pins are put for suspending the various utensils used in cooking. To house-keepers who have once used such an apartment, they are ever after indispensable ...**Second Story** (fig. 4).—Hight of ceiling 7 feet. The stairway ascends from the lower vestibule to a central hall, which is lighted by one small window. There are three fair-sized chambers and three closets. Each room adjoins a chimney, giving opportunity for the use of stoves when required....**Construction.**—The foundation is of broken field stone and mortar, neatly pointed on the outside. The frame is of sawed timber, siding of "novelty" pattern, gables of vertical boarding with their lower ends cut to pattern and battened. Roofs of shingles. The balance of the materials may be inferred from the following table of **Estimates.**—Cost of materials and labor:

87 yards Excavation, at 25c. per yard	$ 21 75
1,150 feet of Stone in foundations, at 8c. per foot	92 00
3,000 Brick in Chimneys at $12 per M	36 00
518 yards Plastering, at 20c. per yard	103 60
2,138 ft. Timber, at $15 per M	32 07
1 Sill 4x8 in. 135 ft. long. / 36 Beams 3x7 in. 15 ft. long.	
1 Tier 4x6 in. 131 ft. long. / 8 Beams 3x7 in. 12 ft. long.	
1 Plate 4x6 in. 101 ft. long. / 2 Valleys 3x7 13 ft. ft. long.	
1 Ridge 2x6 in. 62 ft. long.	
300 Wall Strips, at 12c. each	36 00
60 Joist, at 15c. each	9 00
190 Siding, 9½ in., at 28c. each	53 20
Cornice materials	15 00
400 Shingling Lath, at 6c. each	24 00
68 bunches Shingles, at $1.25 each	85 00
200 ft. Tin Valleys, Gutters, and Leaders at 8c. p. ft.	16 00
150 Flooring (inside), 9½ in. wide, at 26c. each	39 00
80 Flooring (outside), 4½ in. wide, at 15c. each	4 50
3 Cellar Windows (complete), at $3 each	9 00
17 plain Windows, (complete) at $5.00 each	85 00
18 Doors (complete), at $4 each	72 00
Verandas and Stoops (complete)	18 00
Stairs (complete), $16; Mantels (complete), $5	21 00
Closets (com'e), $6; Pump, Sink, and Nails, $25	31 00
Painting, $75; Carting, $15	90 00
Carpenters' labor, not included above	125 00
Incidentals	81 88
Total	$1,100 00

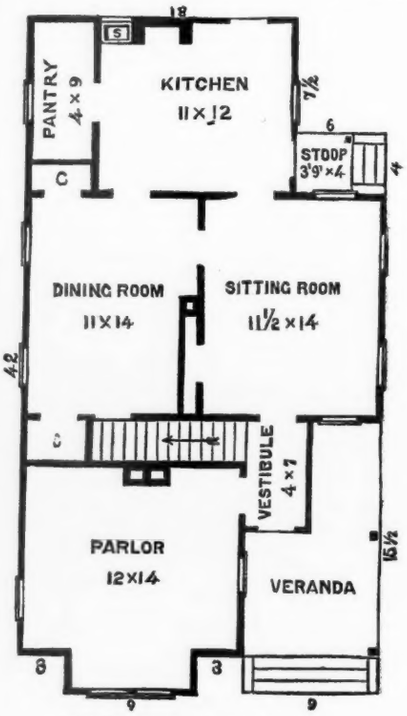


Fig. 3.—PLAN OF FIRST STORY.

"Round Up," is the term used by the herders upon the Western Plains when they gather all the cattle together at a stated place and assort them. It is to be remembered that in that country there are no fields and fences, but all the herds run together and a sort of mutual coöperative care is exercised over the combined herd. Upon the day of the "Round Up," which is advertised and otherwise made known, the men on horseback scour the country over and drive in all the scattered droves to the place appointed for making the "Round Up." The cattle are assorted according to the brand upon them, and are placed by themselves. After the sorting is finished, the herds are counted, those ready for market are driven away for sale, the calves are branded and then the herds are let loose to wander over the plains as before. The branding is done by a hot iron which makes

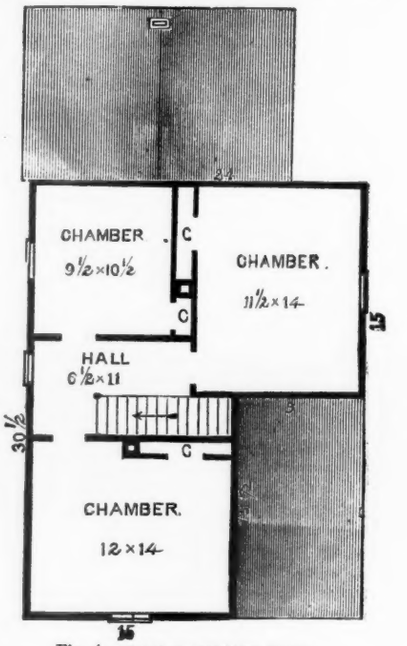


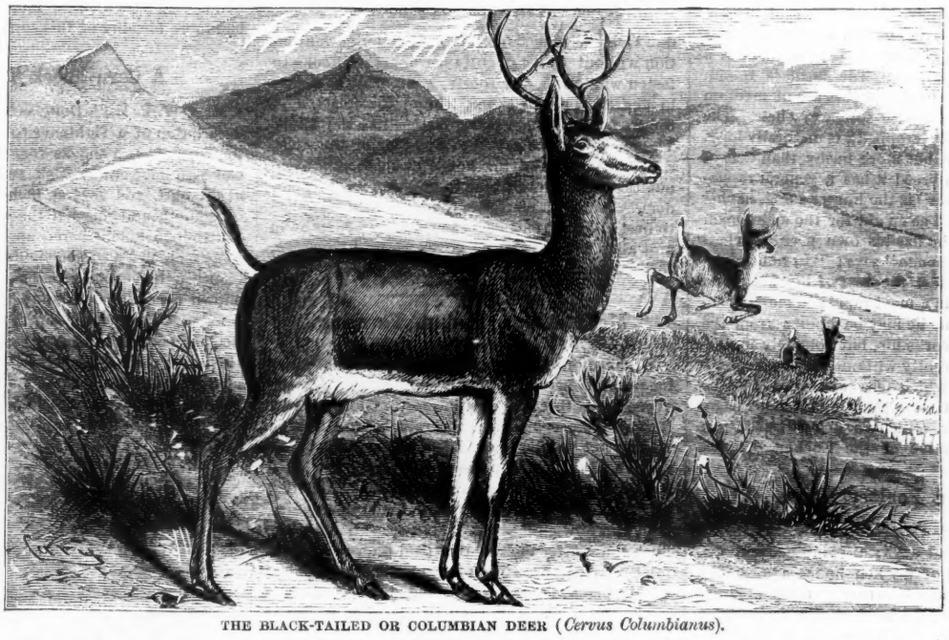
Fig. 4.—PLAN OF SECOND STORY.

some letter or "trade mark" upon the skin of the animal. The process of branding is to some extent a cruel one, but it seems to be the only way of making a permanent mark upon the roving animal. The brands are registered in the County Clerk's office, and the mark is the undisputed title of ownership against all other claimants. Adult animals without a brand are public property, and can be branded for his own by any person.

The Columbian, Black-Tailed Deer.

(*Cervus Columbianus.*)

The beautiful Black-Tailed Deer is quite generally distributed over the western portion of the North American continent, inhabiting most of the hilly lands of California, and extending on the west of the Rocky Mountains nearly to Alaska. It was first noticed by Lewis and Clark (near the mouth of the Columbia River), while on their expedition to the Northwest, but it was not until the discovery of gold in California that this Deer became generally known to white men. The Black-Tailed Deer is a trifle larger, and of a stouter build, than the Virginia Deer, measuring six feet from tip of the nose to the end of the tail, with a hight at the shoulder of two feet and six inches. As shown in the engraving, this Deer has a tuft of long, pendulous hairs hanging from the umbilicus backwards between the hind legs. The horns are cylindrical, and twice forked, and have a spread of nearly two feet between the superior prongs. The antlers bear some resemblance to those of the Red Deer of Europe. The ears are narrower and the head less pointed than in the Common, or Virginia Deer. The tail is dark brown at its junction with the back, but the color deepens to a black towards the tip, giving this species of deer an easily distinguished characteristic, and one from which it takes its common name. The gait of the Black-Tail is not so graceful as that of the Virginia, it having a bound more like the Roebuck of Europe. The Black-Tailed Deer is better known to the western miners than to any other class of white men, and to its nourishing flesh many of the gold seekers owe their lives in times of scarcity of food.



THE BLACK-TAILED OR COLUMBIAN DEER (*Cervus Columbianus*).

Audubon gives a vivid description of the difficulties in the way of hunting successfully this extremely cautious Deer: "Above all things, keep the wind in such a direction as not to carry the scent to the animals." We give a portion of the description: "Once the trail has been almost lost in the stony broken ground they pass, but again they have it. Now they approach and search in different directions the most likely places to find the Deer, but in vain; at last they gain the next summit; the object of their chase is at hand; suddenly they see him—a fine buck; he is yet on the declivity of the hill, and they cautiously observe his motions. Now they see some broken ground and rocky fragments scattered towards the left; they redouble their caution; locks are ready cocked; and breathing rapidly, they gain the desired spot. One instant—the deadly rifle has sent its leaden messenger and the buck lies struggling in his gore. Short work is made of the return to camp if no more deer signs are about; and a straight cut may bring the hunters home in less than an hour, even should they have been two or three in following their prize." The writer was once, for several months, at a house on the Rio Grande, not far from El Paso, at which there was a tame Black-Tail. The house was built in the Mexican style, in a square form, with a court in the center, and the deer had the freedom of this yard. The animal having no horns, the dogs apparently thought it to be defenceless, and would attack to worry, if not to bite the deer. When the right moment came, the deer would stand upon its hind legs, nearly erect, and with its forefeet close together, strike with its sharp hoofs a tremendous blow. If the dog was able to get away, which was not always the case, he was never known to repeat the attack. There is a difference of opinion as to the flesh of the Black-Tailed Deer, some regarding it as dry and less palatable than ordinary venison. The writer has frequently eaten it, but at times when any fresh meat was a luxury; under those circumstances it is difficult to form an opinion.

Dogs—The St. Bernard and "Cocker."

Dogs are so easily taught and are capable of such noble traits of character that we cannot but look upon them, as a class, with respect, however much we may despise some particular cur. There is no more faithful, keen-sighted, sagacious, thoughtful and courageous friend in the whole brute creation than a well-trained and intelligent dog. From the earliest time he has been, and will continue to be, the close companion of man. There are dogs for a hundred special purposes; they having been bred for centuries to some particular end; some to hunt birds, others to chase the fox; some for short legs and long hair, others for length of limb and shortness of hair, etc., etc. Out of this long list of breeds, and cross breeds, it is difficult, in fact, impossible, to select the one best fitted for the farm. It is so much a matter of taste or fancy that each one must, and generally will, select his own dog. There are certain points, however, that a farmer's dog should possess in order that he may be a profitable adjunct of the farm. He should be a faithful watcher of persons and property, and at the same time not savage to strangers within the gates—he should be safe as well as a means of safety. He should be at home and at peace with the live stock, being able to handle them with gentleness, and above all easy to learn, and obedient to his master. This may be asking a good deal of a dog; but there are those which meet the requirements and they are the dogs that it pays to have on the farm.

THE MOUNT ST. BERNARD DOG (fig. 1), is closely related to the Mastiff, but in temper and disposition more like the Newfoundland dog. Until recently this dog has been confined to the Alps and neighboring countries, where he has long been of great service in recovering persons lost in the snow-storms of that region. The actions of these dogs over a snow-bound traveller are said to be almost human, so great are the intelligence and sympathy which they exhibit. There are two quite distinct varieties of the St. Bernard dog, differing principally in the length of the hair, and known as the Rough and Smooth St. Bernard. The best

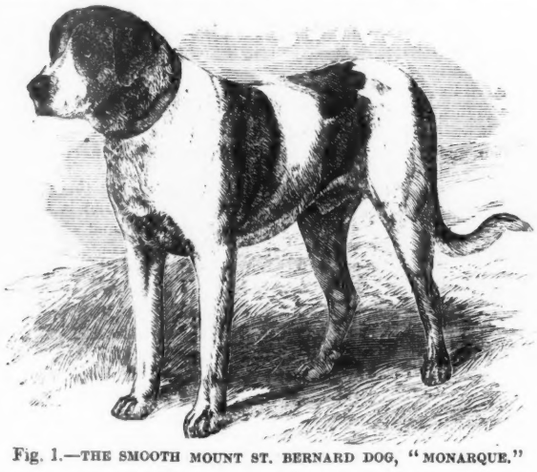


Fig. 1.—THE SMOOTH MOUNT ST. BERNARD DOG, "MONARQUE."

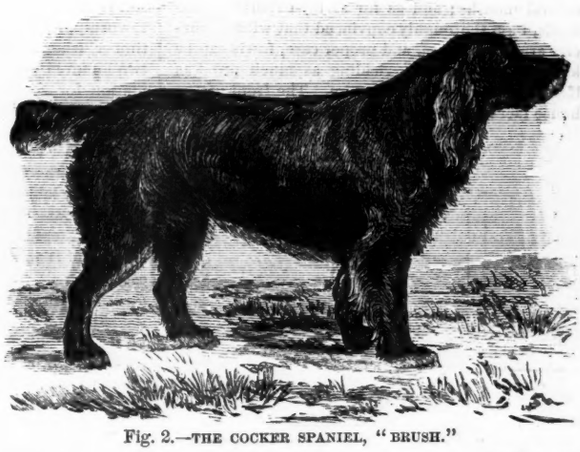


Fig. 2.—THE COCKER SPANIEL, "BRUSH."

strains of both varieties are now to be found in this country, and they make remarkably good tempered and trusty household dogs, being particularly gentle to women and children. The Smooth variety of St. Bernard, shown in figure 1, is red and white, with a broad white collar—many prefer the Rough or the long-haired variety, the color of which is often a deep brindle.

THE COCKER SPANIEL, OR "COCKER," includes a number of sub-varieties, so that it is difficult to describe it very definitely. It may be said in general terms to be an active spaniel, averaging about 14 pounds in weight, elegant in outlines and of a lively and spirited carriage. The head is round, the forehead being oval, the ears are of medium size and well clothed with soft, wavy hair. The tail (which is usually cropped), is naturally long, being somewhat like, but more bushy than that of the Setter—to which breed it has a general resemblance. The "Cocker" is the hunter's dog, having been bred and trained as an aid for the sportsman. While out for game he has his own peculiar characteristics. "Stonehenge" says: "In hunting he keeps his tail down like the rest of his kind and works it constantly in a most rapid and merry manner, from which alone he may be known from the Springer, who also works his, but solemnly and deliberately, and apparently without the same pleasurable sensations which are displayed by the Cocker." The illustration, fig. 2, on previous page, is a portrait of Dr. Gillette's dog "Brush," an excellent representative of the Cocker Spaniel.

Plan of a Poultry House.

"W. R. S.," Morris Co., N. J., sends sketches of a Poultry House, and says: "Thinking, perhaps, that from the plan of my hen house a new idea might be gained by any who may be contemplating a plan by which to build a hennery, I will give mine as briefly as possible. My principal considerations

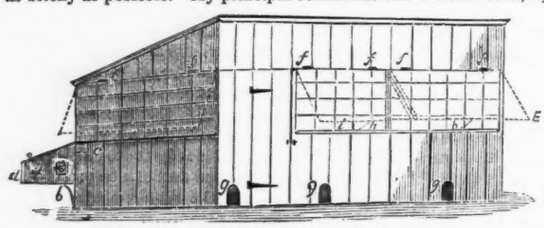


Fig. 1.—FRONT VIEW OF POULTRY HOUSE.

in devising a plan were cheapness, warmth, ventilation, convenience, and with these in view, I have succeeded in building a house, at a cost of less than $45, being 6 by 16 ft. on the ground. I have kept 75 fowls in it at one time, and for a period of several months; and as far as my experience extends, I am thoroughly convinced that with a properly arranged house, and proper care, fowls can be kept in large numbers, yielding as much profit as if with more room and less care. The front of the house faces south-east. The side or back, and end,

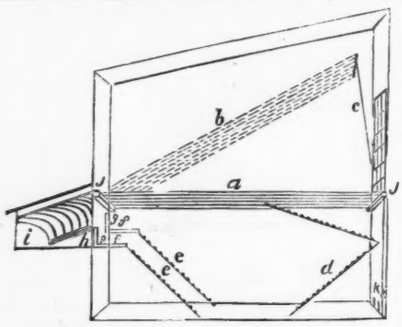


Fig. 2.—INTERIOR OF POULTRY HOUSE.

not seen in figure 1, is made water-proof by paint and putty, and has no opening of any description. The nest alley, figure 1, *a*, is 16 ft. long, 2 ft. wide, 1 ft. high at the back, *d*; *b*, braces to support alley; *c*, strip of iron bolted to alley and main building (inside); *e*, light of glass, one in each end of alley. The cover to alley is hinged to main building and used as a lid; it can be locked if desired. The windows are fastened on by butt hinges, *f*, *f*; *E*, dotted lines, showing a position in which the win-

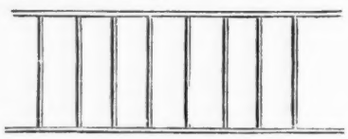


Fig. 3.—THE FRAME OF ROOSTS.

dows may be braced by a stick, *h*, and give ventilation without draft; *g*, entrance doors; *i*, hooks to fasten windows. The roosts, *a*, are made as shown in figure 2, and are simply laid on the joists, *J*, *J*, the frame (fig. 3) not being fastened to the joists. The roosts may be raised to *b* by placing the stick, *c*, under them, and the house cleaned, etc., without the roosts interfering in any way; *d*, *e*, *e*, ladders. There is a platform, *f*, opposite the entrance to nest alley; *g*, entrance to nest alley; *h*, space in nest alley in front of nest boxes; *i*, nest boxes; *k*, fowl entrance to house."

More About Tenant Farming.

We have often heard the remark made that farming property in this Commonwealth does not, on the average, pay three per cent interest. The statement is generally accepted as substantially true, though we may not be able to establish it by statistics. We were not a little surprised, therefore, to find a landholder in our recent travels that claimed that his farm, which he had rented for sixteen years, paid him now an interest of six per cent, and in the flush times after the war that paid ten per cent annually. After drawing from him the strong points of his management, we concluded his estimate a reasonable one. The farm in question is an old homestead, upon which he was born and brought up, and which he managed in person for many years, until he made money enough to live easier in the neighboring village. In the letting of his farm, he had the advantage of knowing just what he wanted in a tenant, and the details of the management needed for successful results upon that particular piece of territory. He had also a strong personal interest in it as his own home, and the home of his ancestors for several generations, which doubtless had something to do with the satisfactory returns which it gave. The man should smell of the soil he handles who would make money out of it. The first strong point in his success was a good soil to begin with, on the best streak of land in the township, indicated by the size and quality of its timber, when it was selected by its first proprietor, two hundred years ago. It has maintained its reputation for good crops from that day to this, and its owners have never been poor men. It was kept in good heart under his own management, and was handed over to the tenant with a large quantity of manure in the yard and sty, and a good system of husbandry laid out for him. Without a good soil, in good heart to begin with, the investment must have paid less interest. The farm consists of 280 acres, and is valued at $10,000. The leading interest is the dairy, making butter for the summer market, with pork and poultry enough to use up the skim and buttermilk. Plenty of manure made by feeding out all the hay and most of the grain raised upon the farm is one of the maxims of farm management. The tenant must make as much manure, measured by the cart load, as he found upon the farm. Sell no hay, no matter how much is left over, is another of the maxims. But if any is sold, its equivalent in manure must be brought back upon the farm to increase its fertility. The remedy for a surplus of hay, in barn or stack, is an increase of stock, which adds to the manure heap and adds to the animal products that may be sold the following season. There is always a surplus of hay to guard against such seasons of drouth as we had last spring, and short crops. Another item in this farmer's policy is long leases. He gets the best possible tenant to start with, and then makes it for his interest to stay. As the farm is rented at the halves, it is not very difficult to do this. If the tenant knows that he is to continue for a term of years, he has a common interest with the owner, in making manure, in raising good stock, in thorough cultivation, and in keeping up the farm. Ten thousand dollars invested in a farm like this, and managed as this is, is as secure as Government bonds, and pays a better interest. Would that we had more farming of this sort. CONNECTICUT.

A Corn Shock Tightener.

Mr. "W. P. H.," Douglas Co., Kansas, sends a description of a Tightener to be used for drawing the tops of corn shocks together at cutting time. Cut a sapling, or any stick, two inches in diameter at the butt, and several inches in length, shave it off smooth and sharpen the small end. A three-fourth-inch hole is bored an inch or two from the large end, and a seasoned hickory, or an iron, pin eighteen inches long is inserted for a handle, as shown near the bottom of the accompanying engraving. Tie one end of the rope (which should be long enough to pass around the corn shock), to the larger end of the stick, putting it above the cross pin on one side and below on the other, so that it may not slip. A loop is tied in the other end of the rope and the Tightener is ready for use. In drawing the top of the corn shock together the

SHOCK OF CORN WITH TIGHTENER.

sharpened end of the Tightener is thrust into the shock, at the place where the band is to go, and the rope is thrown or carried around when the loop is put over one end of the cross-pin. "Now take hold of the handle and turn as with an auger; both ends of the rope being fast it coils around the stick and the shock can be made so small and tight at the top that it will stand up straight from September until April, and turn rain almost perfectly. A boy can make the Tightener in half an hour. After tightening up the shock, we tie with small wire, such as is used for binding grass—then untwist the rope and take another shock. In twenty minutes two men can tie what they can cut in a day."

Marsh Hay is not held in high esteem unless it is cut when very green and well cured and housed. Even then it is light, and should be fed in combination with richer foods. When left standing until late in the season it is dry and tough, and though rich in ash elements, it is inferior food, and not the best of litter, as it decomposes so slowly.

Salt-marsh hay is probably no more nourishing than that from fresh marshes, but is relished better by cattle because of its saltness. If farmers can readily get salt hay, or even that from the fresh marshes, they should do so, and if cut early it may be fed with an addition of meal or other strong food. The gain in manure for cultivated fields will compensate for the trouble in getting it in most cases.

Wayside Fountains.

On a recent trip, visiting farms in Tolland County, Conn., we found several fountains by the roadside for the convenience of travellers. One was fed by a copious spring on the hill side near the line of the road. It was conducted by a narrow trough and bit of inch-iron pipe, into a large iron-bound hogshead placed near the road-bed, and so high that horses could drink from it without loosening the check rein. The overflow passes off into the gutter, and after watering the thirsty traveller and his beast, blesses the adjacent meadow with many extra blades of grass. There is a fall of two or three feet as the water plunges from the spout into the cask, which is pleasant to the eye and music to the ear. This fountain, which never runs dry in summer and never freezes in winter, is a great convenience to the neighboring village and to all who have to go thither to mill and to meeting, to the store and to the post office. With very little loss of time the teams are watered. Unlike brook water, it is always at the palatable temperature, and never frozen. The whole expense of this public convenience could not have exceeded five dollars, and the cost of annual repairs is too small to be noticed. One other fountain was by a lovely road side nearly a half mile from the house of the farmer who put it up, on the road he had most occasion to travel. He had found that his horse might drink safely all the water he wanted if he travelled a half mile after drinking. It saved an extra trip to the stable after he reached home. All the money outlay for this public convenience was about eight rods of half-inch lead pipe, which brought the water from a spring into the trough. The labor upon the ditch and upon the chestnut log of which the trough was made would not bring the whole cost to more than ten dollars. In another case the water was brought from a brook in an open ditch, and turned into a half hogshead at the road side by a narrow trough. Not more than a day's labor was expended upon the job. The man who establishes such fountains as these is a public benefactor. He who makes a spring by the wayside, where none was before, has the charity which is twice blessed; it blesses the giver and all his beasts with perpetual refreshment, and the wayfarers of the present and coming generations will sing his praise. The statutes of this Commonwealth provide that any one who will construct such a fountain and keep supplied with water with the approval of the selectmen, shall receive three dollars annually. Oftentimes it would be a good investment for the farmer to provide this much needed public convenience, and draw the premium.

CONNECTICUT.

Gapes in Chickens.—"J. C. T.," Queens Co., N. Y., sends his experience with gapes, which is certainly very encouraging and illustrates the value of keeping the poultry, the coops, etc., in a clean state. "I have raised chickens for thirty years, and never lost one with the gapes. The disease appeared as soon as I began, but I had seen that wheat dampened and rolled in sulphur would cure it, and I tried it with entire success. Soon after, I had occasion to use a watering pot, kept in the hen house, and I became so covered with vermin, that I was obliged to take a bath immediately, and change my clothes. I set about a reform forthwith —white-washing the hen-house thoroughly, including perches, and nests, and sprinkling the floor with clean sand. When the chicks are hatched I burn the hay of the nest, and whitewash the nests again, which should always be movable—move the coops, which are also white-washed inside, to a new spot every day, keeping the hen cooped a few days, then let them run, shutting them up at night. I had no idea of preventing the gapes; my efforts were only to secure cleanliness, since then, no chicken has gaped on these premises, and, of course, the older chickens are much improved in health and vigor, so that there has never been any kind of sickness among them. It cannot too often be repeated, and emphasized, white-wash—*whitewash*, in every nook and cranny, and clean out and put dry earth or sifted coal ashes under the perches frequently. I do not say there is not a worm in the throat, I have had no occasion to examine a chicken killed by the gapes, but I *do* say, no chicken kept free from lice ever had the gapes with me."

Among the Farmers.—No. 57.

BY ONE OF THEM.

The labor market has been overstocked, in this section at least, for some months past, yet so far as I see, few of my neighbors have taken any advantage of it except to pay lower wages, which they are not slow to find out may be done. Very fair farm hands, good to work with others, and under a foreman, might have been hired at $10, except just during the pressure of haying. I hired a very active Hungarian Slavach, or Slavonian, for those

Fig. 1.—MAKING A WITHE.

wages, and found him an excellent plowman and mower, and the handiest man with an axe I ever had on the place. He was discontented and restless, and needed constant driving and watching.

The Use of Withes.

The use this fellow made of withes was remarkable. He had evidently been accustomed to binding faggots, and would take any green branch, straight or crooked, entire or branched, and placing it beneath his foot, as in fig. 1, twist and manipulate it until it made, in a very short time, a complete rope. (See fig. 2.) He would combine several withes by knotting them, and so make a rope 15 or 20 feet long, and strong enough to bear the pull of two men, or even of a horse.

This making and use of withes is not new to me, but the extreme facility with which the man made more flexible and tougher ones than I ever saw before, out of all sorts of woody growths, set me at imitating him.

I have a great stock of Ozier Willows, which we use from preference, but when in the woods, or fields, white birch, hazel, witch-hazel, alder, and even cedar and wild cherry make excellent withes. The only "trick" is to get a uniform twist, which breaks up the integrity of the fibres of the wood. It may be twisted too little, and then will be brittle

Fig. 2.—THE FIBRES TWISTED.

and perhaps break, or be twisted too much, in which case it will be weakened by the breaking of the fibres. I had a lot of corn fodder which I bound with withes with great satisfaction.

There is a "trick" or two about the handling of these withe-bands that I was glad to know. Figure 3 shows a common twist given to the ends of the withes. The extreme butt end, it will be noticed, is bent at right angle to the twist, and this gives a powerful leverage, by which the band may be very tightly drawn. In most instances there will be very little twisting of the butt end, but the smaller end will wind itself around the other. It does not matter if only at last, when the withe is fastened, we bend the butt end upon itself, and tuck as shown in figure 5. This will hold any ordinary strain, but when a very secure fastening is needed, the small end of the withe—very likely terminating in a bunch of twigs—is laid in after making one or two twists, as in figure 4, and caught in, when other turns are given. Then the end is tucked as in the other case.

Fig. 3.

Willows.

I am very glad I have plenty of Willows. My land is moist, a portion of it, and they grow rampantly, and they are very useful not only as withes, but for many other purposes. Were they more commonly cultivated, I think we would soon learn to make them as useful as do the Dutch and French and Germans. It is no unusual thing to see wagon bodies made of Oziers plaited together. Four pieces, having holes left where they may be fastened together, and to the stakes of the wagon, constitute the whole affair, durable, cheap, and capacious, for these wagon bodies are usually employed for light loads, as for leaves and for litter.

A Question in Breeding

has lately interested me, and I have discussed it with some of my friends. Ought a breeder of improved stock of any kind, whose aim is to benefit himself, his herd, and the breed, to breed for the perfection of individuals or for the establishment of a family or families? We breed individuals of course, and every breeder's aim is to produce the best individuals possible. The question is, whether he shall be satisfied with immediate results, or only with the results in the long run. Outside a select list of Shorthorn breeders, there are very few breeders of any class of animals in this country, unless we include a group of game-fowl breeders, and perhaps some breeders of Light Brahmas, too, who have not been, judging by the pedigrees of their animals, perfectly willing to ignore the family in their efforts to produce superior excellence in the individual by hap-hazard crossing. All crossing of diverse strains is hap-hazard. No one can tell how the cross will "knick." To be sure, the crossing of two totally distinct strains of blood, especially if they have strong good points which are inherited, almost always results favorably in the first generation. And the fact that still better results are usually gained by breeding the second generation back to the first, provided there is a fair foundation of constitutional vigor, indicates too clearly to be overlooked that great success in the future will be gained by breeding families.

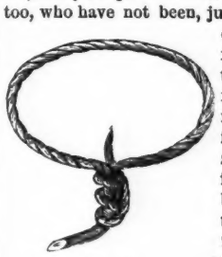


Fig. 4.

What is a family? I regard it as a group of animals of closely related blood, and having similar characteristics. The animals look alike, possess similar qualities, have similar dispositions, and have similar constitutional tendencies. Of course the closer a family is bred the more these similarities prevail, and the more surely will they be propagated. In breeding neat stock and studying pedigrees, with reference to families, we encounter on the threshold a problem for which I have never met a solution: Which is the most potent, the in-

Fig. 5.—TIE COMPLETE.

fluence of the sire or that of the dam? The practice of Shorthorn breeders, if I interpret it aright, as well as that of Devon and Ayrshire breeders, is not to regard blood, no matter what the proportion may be, as admitting an animal to the distinctive *name* of the family unless it comes in the direct dam's line; and yet, every animal in the direct line is regarded as in and of the family. A "Constance," with say four "Duke" top crosses, although this would show that she has $^{15}/_{16}$ths Duchess blood, is not a Duchess and never can be. Yet she may have many or all the characteristics of the family.

Is this distinction well grounded? or is this way of considering animals as belonging to a certain family, because that is the line of their dams, erroneous and misleading?

I do not know that any man is wise enough to answer the question. It seems as if the blood of either parent ought to be potent in exact proportion to the closeness of its breeding. Among the Jerseys, for instance, we have what is called a pure "Alphea," that is an animal going back on every line to Alphea and Jupiter, her own brother—of course to Saturn and Rea, the parents of both. Now the question is, as brought down to practice, will a bull which has such a pedigree, crossed upon a cow of another family, or no family, impress his progeny with Alphea characteristics, more than a cow of the Alphea family with no out-cross, paired with a bull which is an entire "out-cross."

I think it is not too much to say that this very important question has never been answered. There are certain Jersey breeders, at any rate, who may, by a few experiments, settle this question permanently. They will do the country, and the world, a great service if they will. One man has a cow, another has a bull—a few have both adapted to test this. It is earnestly to be hoped that they will co-operate for the solution of the problem.

Cost of Raising a Milch Cow.

I have received the following note from "A Subscriber to the Agriculturist": "I declined to accept an Alderney calf of three months for the reason that there was no pasture ground on my four acres of country home. My neighbor says that the milk of two years will more than pay for the cost of fodder during the three years of minority, which I doubt. Can you give information as to the cost of raising a calf to maturity or maternity when all the food is purchased?"

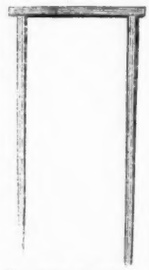
This is a question upon which I would be very glad to have the results of the experience of other readers and subscribers to the *American Agriculturist*, but will briefly discuss the subject here. A calf at three or four days old is worth about a dollar. If it be kept until it is six weeks old, and fit for veal, it will consume six quarts of milk a day at least, and probably some oil-meal or corn-meal porridge besides. If milk is worth 3 cents a quart on the farm, that will be 18 cents a day for 42 days, and will amount to $7.56. To this add $1.00, the original value of the calf, and 50 cents, the cost of the meal used to supplement the milk it would have if it sucked the cow, and we have $9.06 as the actual cost of the calf at six to seven weeks old, which is quite as much or a little more than it would bring if sold for veal. The profit of this transaction is only in making a market for milk at 3 cents a quart. We can raise calves, however, and even fatten them for veal, and make pretty good veal too, and feed only skim-milk, adding oil-meal, oat-meal, or Indian-meal—or best a mixture, in the form of well-cooked porridge. I calculate that this system is good enough for calves that we are going to raise, though I would not want to be set down as saying that a calf for veal ought to be fed better than one to be raised to maturity. My point is this: If we are going to raise the calf, it is turned into a paddock and has a free run a good part of each day; thus it can never become fat, and it is able to do well upon, and thoroughly to digest and profit by different food from a veal calf. We will say it receives six quarts of skim-milk a day, at a cost of 1 cent a quart, and that besides this it gets meal to the amount of 1½ cent a day, 7½ cents a day for 42 days being the cost of feeding. This makes, adding the $1.00 original value, $4.15 as the cost of the calf at six to seven weeks old. If moderately fat, it will sell for $7.00 or $8.00, so we make a gain of some three dollars, besides the butter of 292 quarts of milk. I dispose of several calves a year in this way, and it often happens that the butchers or market men decline point blank to believe that they have never sucked—and my calves never do suck a single day.

Fig. 1.—THE BENT AXLE.

Now to raise the calf from this point is the rub. If we must buy all the feed and give it all it will eat, it will cost 15 cents a day for one year, or $54.75, or say $50.00 as the cost of a yearling. This is more than it is worth three times over, unless it be of remarkable blood and can be readily sold for that or for more, which is not likely. If we want to buy we shall probably have to pay as much as that, and it may be the calf or yearling we want will be cheap at $100.00; but if we must sell we will find it very different. If the cost of feeding for the first year is $50, that of the next year will be $60 to $65, and the cost of the heifer, when she is ready to calve, will be as follows:

Cost to the end of the first year	$ 50.00
Cost of bull service	5.00
Cost of keep to the end of the second year	60.00
	$115.00

This is of course much more than a first-rate heifer can be bought for in the dearest market in this country. She will do exceedingly well if she yields 10 quarts of milk a day on an average for six months, making 1,800 quarts, and 4 quarts a day for the rest of the year, making 720 quarts, or 2,520 quarts in all. If this can be sold for 6 cents a quart, it will bring in $151.20. The keep of the cow will be not less than 20 cents a day, or $73.00, which, being deducted, leaves $78.20 as the net earnings to be set off against the $115.00 which the cow cost.



2.—THE SHAFTS.

We must not forget that not one heifer in ten does as well as this, and also that not one heifer in a hundred costs so much at her first calving. Most people who want to raise a heifer can hire pasturage for young stock at about 25 cents a week. This will make a great deduction in the cost, namely of $43.50. The heifer therefore would cost, if pastured six months in each year as proposed, only $71.50, and if she should give the same amount of milk which we figured upon, and it could be disposed of to the same advantage, the milk of one year, to say nothing of the calf, would not only pay the cost of raising the animal, but give a net profit of $6.70.

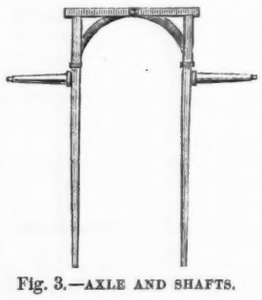


Fig. 3.—AXLE AND SHAFTS.

"Figures don't lie," but they do deceive wofully sometimes, and if anybody tries to carry out these results he will probably be disappointed. There are, however, thousands of two-year-old heifers which, if fed at a cost of 20 cents a day, would yield ten quarts of milk for six months.

It is a great satisfaction to have a nice heifer of one's own raising, which the daughter of the house has petted day after day, which the children have adorned with garlands of daisies, and one which is as gentle as a cosset lamb; so if the raiser will charge $75 or $100, to satisfaction, and credit the heifer with the same sum, the balance on the final trial will be found in favor of the pet heifer of the family.

Fig. 4.

Hints and Helps for Farmers.

A PORTABLE FEED BARREL.—"Subscriber," L. I., sends a description of a Feed Barrel on wheels which he has used for a number of years, and claims "is the handiest thing I have on the place." An old buggy axle and wheels were taken as the basis, or running gear. The axle was taken to the blacksmith and bent into the form shown in figure 1. Shafts, fig. 2, were then placed on the axle and

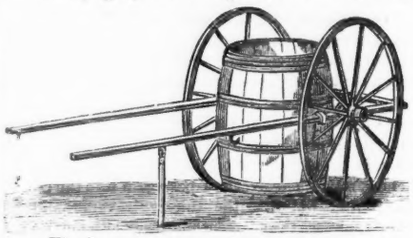


Fig. 5.—THE BARREL CART COMPLETE.

fastened behind with a bolt, at each side, with an axle clip, fig. 3. An old pork barrel was furnished with two hooks, placed on the sides just above the center, as shown in figure 4. The shafts being passed through under these hooks, the affair is complete as in figure 5. "You can unload the barrel by throwing up the handles when the water or feed will run out, or you can slip the barrel off and take another empty one. I have three such barrels, two for swill, and one for water for cattle or the garden." The shafts may be held up by a leg.

A MACHINE FASTENER.—In a talk with an ingenious farmer the other day, we asked him if he had any way of securing his fanning mill, corn sheller, or other similar machines, to the barn floor. The method employed by him, is as follows: By means of two screws, a strap of iron (with the lower end turned up to form a hook), is fastened to the lower end of the legs of the mill, as shown in the engraving. When the machine is put in its proper place, it is secured in its position, by driving a staple of flat iron, *a*, with chisel points, over the hooked end of the iron, that is, upon the leg of the machine.

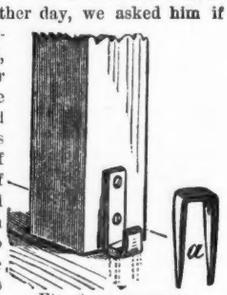


Fig. 6.—A MACHINE FASTENER.

A TURNIP PULLER.—"Old Subscriber," Long Island, send a sketch of a Turnip Puller, shown in

Fig. 7.—A TURNIP HOOK.

figure 7. It consists of a double or pronged hook fastened to a long handle like an ordinary hoe. With it the person can stand erect and work rapidly and with comparative ease. "It will not cut or injure the turnips in the least. Once used one would never pull turnips by hand again."

A RAIL HOLDER.—"J. C. W," Cromwell, Conn., is so much pleased with a Rail Holder that he has used for some time, that he sends a sketch of it

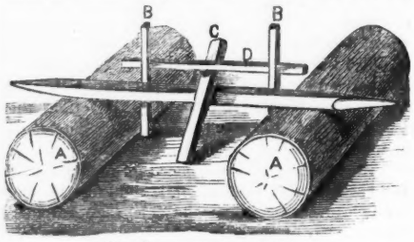


Fig. 8.—A RAIL HOLDER.

for the benefit of our readers who may have rails to sharpen The rail is laid on chopping blocks, or logs, *A*, *A* (fig. 8), and held in place by three stakes; two

of them, *B, B*, about four feet long, and are driven firmly into the ground, four feet apart, alongside of the rail. The other stake, *C*, is driven between these two, and in a slanting direction. A lock-stick, *D*, is placed above *C*, resting against the posts, *B, B*, by means of which the rail is held firmly in place. When the rail is to be removed, lift out the bar, *D*, withdraw the stake, *C*, and the rail is loose and ready to be taken out.

A SAFE GATE LATCH.—"T. J. M.," sends a sketch of a gate latch, (figs. 9 and 10), which he has had in use for some years. It is very simple and is safe, as it cannot be pushed back without lifting, cannot be shaken loose by the wind rattling the gate, nor rubbed open by cattle or horses.

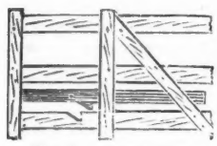


Fig. 9.—LATCH OUT.

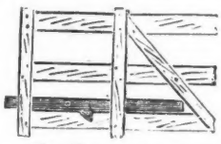


Fig. 10.—LATCH IN.

A HOME-MADE LEVEL.—The accompanying engraving shows a level made by L. W. Smith, Luzerne Co., Pa., to whom we are indebted for a sketch and description. It consists of two pieces of glass tubing each about 5½ feet in length, fastened to registered strips of board, the whole resembling great thermometers. The lower ends of these two parts are connected by rubber tubing of any desired length. The whole is then filled with water up to the middle of the glass tubes. The figure represents the level placed on the top of two brick pillars. The hight of the column of water in the left-hand tube, as read off on the graduated scale is 4.10 feet, that in the right-hand tube is 0.80 ft. therefore the right hand pillar is 3.30 ft. higher than the left hand one. With this instrument the foundations of houses may be made exactly level.

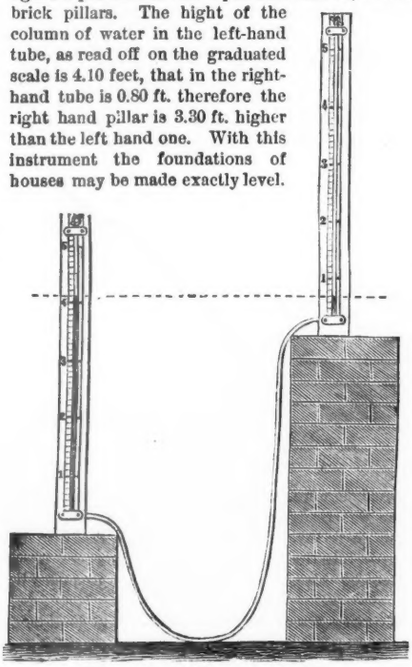


Fig. 11.—A HOME-MADE LEVEL.

It will also be of use in arranging mill shafting, laying long beams, floors of buildings, etc., etc."

"Weathering."—This term is often used among farmers, and is certainly a good one, as it expresses as much of the nature of the process as can be contained in a single word. When land is left without a crop, and is exposed to the action of the air and sunshine, the winds and rains, frosts and other natural agencies by which the original rocks, through long years, have been converted into rich soil, we say that it is "weathering." In other words, there is no crop to take up the nourishment as it is formed in the soil, and there is therefore an accumulation of these food materials in the soil, and it gradually improves by the process. The throwing up of the soil into ridges in the autumn, that there may be a greater surface exposed to the weather, is an instance of winter "weathering," while fallows are the more common instances of "weathering" during the summer.

A Spring Pen-Stock.

"T. S. B.," Schuyler County, N. Y., sends sketch and description of a method he has adopted for conducting water from a spring to a trough in the barn-yard. He writes as follows: "Having occasion to drain off a piece of flat land.

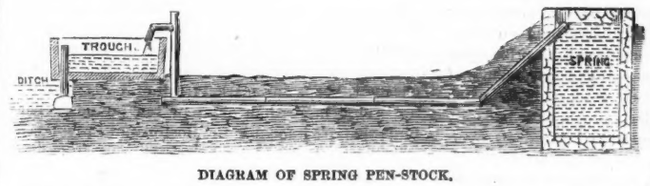


DIAGRAM OF SPRING PEN-STOCK.

overflowed from a spring, I dug a ditch from the spring which ended within a short distance of my barn. Before closing the ditch the thought struck me that I might provide for a constant supply of water for the stock in the barn-yard. I found the land so level that it would barely admit of getting the water into a trough above ground. I concluded to dig out the spring to a fair size and sufficiently deep to prevent the waste of water, and laid it up in cement, the water being allowed to escape only at the top. In the meantime I procured pump-logs to reach to the barn. The end of one of the logs was cemented near the top of the spring and connected with the others, which were laid, with a slight decline, to the pen-stocks in the barn-yard, as shown in the accompanying engraving. To prevent the overflow from the pen-stock from making a wet place in the yard, a hole was bored in the bottom of the trough and a pipe inserted, the upper end of which reached nearly to the top of the trough. The excess of water thus flows off and directly into a closed drain below. I have a full supply of water, brought over a nearly level field, and no water standing around the trough in the yard. A screen of fine wire should be placed over the end of the log at the spring, to keep out the mice that might otherwise get in."

What is the Best Material for Drains?

The very best material for drains is not yet discovered; certainly it is not yet thoroughly tested. Many things have been tried in draining, both in this country and in the British Isles, that have failed. Rails, brush, plank, and cobble-stones will not make a permanent drain. Wood rots in time, and stone, without a culvert at the bottom, soon clogs, and the work has to be done over again. The common clay or brick tiles, now so generally used in this country, where draining has been introduced, answer a very good purpose where every tile is thoroughly burned and laid below frost. We have noticed recently in a pile of these tiles left over from a job of draining, finished several years ago, that they have crumbled more or less where they have been exposed to the weather. At the outlet of drains where the water does not run continually, the tile is disintegrated after a while, and becomes unserviceable. That waste which goes on at the mouth of the drain takes place more slowly under the soil, but it is only a question of time when some of the softer will crumble, and the water-duct will be clogged. To make a drain as lasting as the soil itself, we want something harder than brick, and, if possible, lighter. One great drawback to the use of brick tiles is the great expense of transportation. Glazed pottery tile, hard burned, made of fire-clay, or the poorer kind of potter's clay, affords a tile that is practically indestructible, and much lighter than the common brick tile. It costs a little more to manufacture, but is sold at the same price. When the lessened cost of transportation is considered, the glazed tile comes much cheaper to the consumer. These tiles are made in Ohio, and shipped to Boston, and sell in competition with the common brick tile. Of course they can be made profitably in any place where the raw material exists, if there is a demand for them. The objection which arises from their impervious character is found to be no objection at all in actual use. Water enters the drain at the joints altogether, as it does mainly in the common brick-tile drain. The only advantage of the porous brick tile would be in soils so wet as to keep the drains always full of running water. The remedy for this would be to bring the drains closer together. The great advantage in the use of this glazed tile is that every tile is perfect, and practically indestructible by the action of water, or of such freezing as occurs three feet below the surface. A field thus drained would be a permanent investment for all coming generations. This material of which glazed ware is made, though as durable as any, may not possibly be the cheapest for the manufacture of tiles. A glass tile made of the impure silex from which common black bottles are made, would be thinner and lighter than the glazed ware, and would be quite as indestructible. The sea-shore is an inexhaustible storehouse of sand, and it is very widely distributed in all granite regions. In this connection we have thought of the slag drawn off from the furnaces in a molten state, which is now mostly an encumbrance. If this could be run into proper molds as it is drawn from the furnace, it would utilize a generally worthless material, and make a tile as light and durable as glazed ware. C.

A Smoke House and Ash Pit.

For an ordinary farmer's family a smoke house six feet square inside is large enough. If there is danger of frost heaving the walls, four oak or cedar fence posts may be hewed and halved together, to be partly bedded in the ground and to support the superstructure of bricks. Upon these foundation sills put walls seven feet high, capped with plates of two-inch planks. The rafters, set 14 inches apart, are notched into these and nailed to a ridge-pole supported by the brick gables. Thus there is no tendency to spread even if heavily loaded. The Ventilator in the roof is more for ornament than use. Hooks in the rafters support the meat.

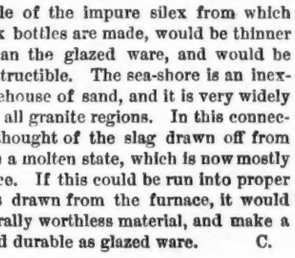


Fig. 1.—SECTIONAL VIEW OF SMOKE HOUSE.

A wall two and a half feet high is placed across the smoke house inside, dividing the space, so as to make an ash pit four feet wide. This low wall is also capped by a plank, which should be built into the side walls. This forms a convenient standing place for hanging the hams. The door may be in the middle or at the side, the fire-place is set in the narrow entrance space. A flat stone, supported by two brick piers, makes as good a fire-place as anybody needs for smoking the meat hung to the roof above.

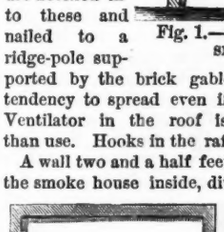


Fig. 2.—GROUND PLAN OF SMOKE HOUSE.

Overfeeding for the Fairs.—The practice of stuffing animals for a number of weeks and even months, for the sake of making them over fat and out of proportions for the Fair, is not only

a foolish but a ruinous one. One has but to point out the destruction that has resulted from this overfeeding in the famous Bates' and Booth's Shorthorn cattle, to show that a practice that will so deform and derange the animal as to render it either unfit or unable to propagate its kind, is wholly wrong and to be deprecated in the strongest terms. Judges at our Fairs should understand this matter and lend their whole influence to the side of a fair reasonable feeding and preparation for the Fair. Anything that is stimulated to an unnatural development should be considered only in the light of a monstrosity, and hold no place among animals that are competing for a prize upon the merits which they possess. The descendants of prize stock should be the best stock; but too often those who have bought prize animals have had only to regret it, because they were injured by overfeeding and took their prizes on artificial points, which were not heriditary, and they were therefore not able to transmit them to their offspring.

Drawing Corn in the Shock.

It is frequently convenient to clear the corn-field soon after cutting, so that the ground may be plowed for wheat, or that the stock may be turned into an adjoining meadow, between which and the corn there is no fence. With their removal in view, the shocks should be made small and be firmly bound. It is best to use a wagon with a low, flat and wide "rigging," like that shown in fig. 1. This "rig" is made of four pieces of scantling, and four long, wide boards, put together as shown in the engraving. The wagon-reach should be let out more, and the rigging made longer than the one shown in fig. 1, in order to give more space between the wheels, an arrangement which will be found to be better. The method of raising the shocks upon the wagon is shown in figure 2. Three men are required for the most rapid and consequently the most economical loading of the corn. The wagon is driven quite close to the corn, and the man on the wagon throws a rope-noose over the top of the shock and draws it towards the wagon. At the same time the two "lifters" place a light, stout pole under the shock and lift it up, simultaneously swinging the butt of the shock out, away from the side-board of the rigging. One shock is placed lengthwise between the hind wheels, and the same at the forward end, after which the shocks are built up in the middle. The load will not be high, both because it will be heavy enough without, and for the reason that it is not economy of labor to lift the heavy corn higher than is necessary to load it.

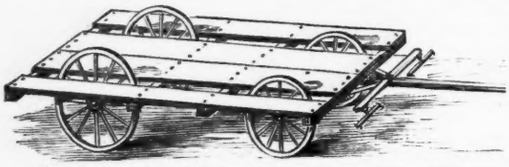


Fig. 1.—RIGGING FOR DRAWING CORN IN THE SHOCK.

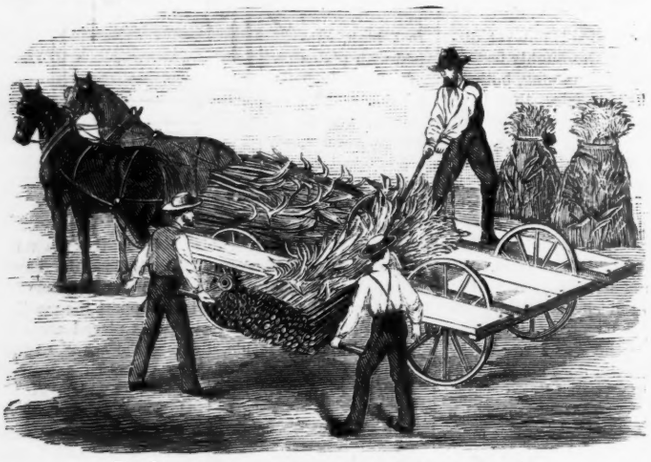


Fig. 2.—METHOD OF LOADING THE SHOCKS OF CORN.

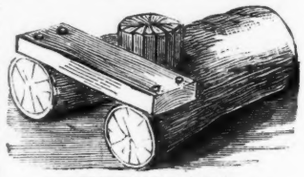
Large Turkeys for Breeding Stock.

The common practice of breeding only from second brood turkeys, and those that are not fit to kill at New Year's, is a very short-sighted policy. In nothing will a good selection pay better than in breeding this noble bird. In the wild state where "the survival of the fittest" is the rule, gobblers weighing 40 pounds are not infrequent, and some are upon record weighing 50 pounds. The prevailing custom of breeding from the smallest and cheapest, keeps our markets full of birds that do not weigh more than eight or ten pounds. The birds that are known in the Boston and Providence markets as Rhode Island turkeys, run at least a third larger, and lots of dressed gobblers averaging twenty pounds can be furnished by the dealers at New Year's or later on very short notice. We know of one breeder who killed four adult gobblers last year that weighed, dressed, 126 lbs., or 31½ each. In all the districts from which these supplies are drawn, the farmers have found that it pays to take extra pains with the turkey crop.

There has been a steady gain in the average weight of the flocks sent to market at the three great festivals for the last twenty years, and the limit of perfection in this bird has by no means been reached. A large bronze gobbler, the offspring of a pair weighing 62 lbs., that took the premium at the New York State Poultry Show, was brought into Eastern Connecticut three years ago, and three large flocks have been raised from him, and nearly all of them have been sold for breeding stock. The unanimous testimony of breeders even in this district where large turkeys are common, is that their flocks have been greatly increased in size by this stock. Suppose there is only a gain of two pounds in the average size of a flock of one hundred birds, it makes a difference of two hundred pounds, worth forty dollars at the present price of poultry in Eastern markets. This is nearly all profit, for the turkeys get the most of their growth in the pastures and woods, and are only fed freely six weeks before marketing. Why then do not farmers generally invest in better stock. The chief reason probably is the cost of the stock. It seems a large price to pay five, ten, or twenty dollars for a gobbler of extra weight, or for a hen weighing 15 to 20 lbs., though such a pair of birds would leave their mark upon the broods of a whole neighborhood, and add thousands of dollars to the value of the annual sales for years to come. The breeder of fine stock graduates the price of his birds principally according to their rapid development and weight. They will vary in weight quite a good deal even in the purest bred flocks. Gobblers weighing 18 to 19 lbs. in December are common; a quarter of the flock may reach 20 to 21 lbs., and a few may add a pound or two to these figures. The extra price asked for the last two or three pounds seems unreasonable, and yet it is the cheapest part of the bird, for it is this which shows his better constitution and aptness to take on flesh and fatten. It is the same principle applied to poultry which has given such wonderful results in the breeding of Shorthorn cattle. The large, well-shaped gobbler, beautifully marked, and bred to hens of similar quality, will give you birds of good, strong constitution that will develop rapidly and make the most flesh out of a given amount of food. The cheapest bird we ever bought was a young gobbler of this character, for which we paid twenty-five dollars. Scores of flocks and thousands of birds have descended from him, and he has left his good qualities upon every one of them, so far as our observation has extended. A seven months' bird of 3 or 4 lbs. extra weight is quite sure to make a 30-lb. yearling, and such a yearling gobbler is worth twenty dollars in any breeder's flock that understands his business. There is no bird among all our fowls more susceptible of improvement. *

Holder for Fire Wood

The accompanying engraving represents a contrivance for holding the blocks of fire-wood while they are being split. The holder is made from a fork of a tree, such as may be easily selected while one is chopping in the woods. A heavy piece of hard-wood plank is spiked upon the sawed ends of the forks. This forms an inclosed space, into which the block to be split is placed, and is there firmly held in an upright position until all the necessary divisions are made. A simple holder of this kind, if well made and stout, will last for several seasons, and save much stooping over and picking up of separate sticks while splitting the family fire-wood.



A FIRE-WOOD HOLDER.

A Cabbage Cutter.—Mr. "J. H. S.," Erie Co., Pa., sends a description of a Cabbage Cutter which he has made, and used with great satisfaction. An old cast-off shovel was taken and a triangular piece cut out of the blade, as shown below. The V-shaped edge was then ground sharp and the implement was ready for use. "With one stroke the cabbage is severed from the stump, ready to be thrown into the wagon." Mr. S. says there is no patent on this Cutter, and all are free to make it.

A SHOVEL CABBAGE CUTTER.

Turnip Experiments.—It is certainly monotonous to grow the same crop on the same field for twenty or thirty years, but it is only in such monotony that satisfactory answers can be obtained to some of the most important questions in agricultural practice. It is in the fact that Dr. Lawes has conducted experiments with several different crops upon the same plots for such a long series of years, and with great care, that the deductions coming from his work are of such value. The recent statement in regard to his turnip experiments are in point. He says:—"In 1845 the land taken into turnip experiments at Rothamsted, and manured with superphosphate of lime, gave 14 tons per acre of bulbs and 4 tons of leaves. It has been under experiments ever since, but no succeeding crop has been so large, and at the present time a full supply of potash, superphosphate, and other mineral manures, will not produce more than 4 or 5 tons of roots to the acre. It is therefore evident that at Rothamsted the stores of fertility accumulated in the land before the experiments were commenced have been exhausted."

A Corn-Husking Bench.

A convenient bench to hold the corn while husking, is shown in figure 1. It consists of two poles of hard-wood, seven feet in length, to which legs

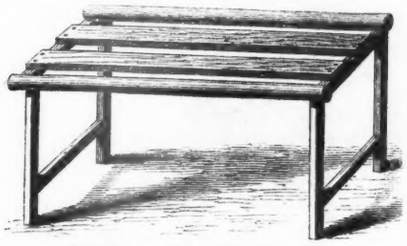


Fig. 1.—A CORN-HUSKING TABLE.

are attached by means of auger holes and wedges. The bench should stand about two and a half feet high, be well braced, and covered with thin boards as shown in the engraving. To load the shock the bench is turned down on its side, as in fig. 2, when the shock is grasped near the top, and the bench, with the shock, tipped back into an upright position again. Figure 3 shows the corn ready for the husker, who can stand at his work. A farmer who has used one of these benches will not return to the

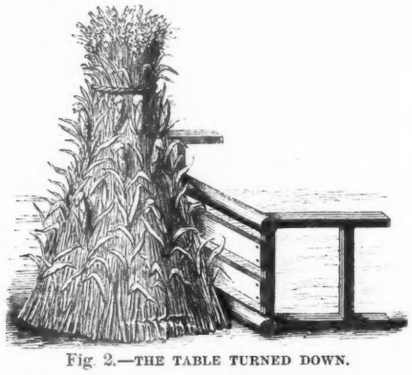


Fig. 2.—THE TABLE TURNED DOWN.

old cramped method of husking upon the knees. Besides in muddy weather there is a great saving of fodder that would otherwise be badly soiled.

American Natural Cements.

An interesting paper on American Natural Cements was read by Mr. F. O. Norton at the recent convention of the American Society of Civil Engineers, from which we select and condense the following: The principal deposit of magnesian lime-stone, valuable as a cement—occurs in Rosedale, Ulster Co., N. Y. This Rosedale cement first came into use in 1823 in the construction of the

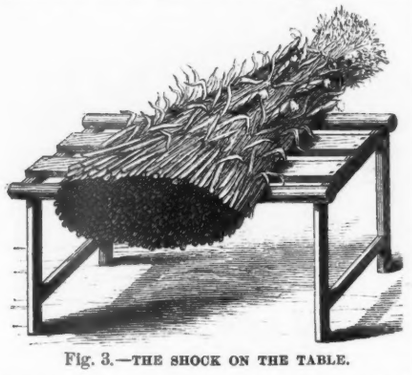


Fig. 3.—THE SHOCK ON THE TABLE.

masonry of the locks, etc., of the Delaware and Hudson Canal. At the present time there is between a million and a million and a half barrels of this cement made and used each season. Rosedale cement develops great hydraulic energy in twenty-four hours after being mixed with water, and is at that time equal to the English Portland. After the first day, the Portland gains rapidly upon the Rosedale up to the seventh day, when the difference between the two is the greatest. At the end of a month the strength of the Rosedale approaches quite nearly to that of the Portland, and the difference is continually reduced thereafter. In practice, these cements are not used pure, but are mixed with a large or small per cent of sand, which reduces the strength of the mixture in the following manner: One part of sand gives mortar one-half as strong as the pure cement; two parts, one-third as strong; three parts, one-fourth; four parts, one-fifth; five parts, one-sixth. With the Rosedale, the reduction when mixed with sand is somewhat less than in the case of the Portland. The strength of Portland cement mortar, one of cement to two of sand, at the end of six months is 224 pounds to the square inch. The Rosedale in the proportion of one of cement to one of sand at the end of the same time is 257 pounds to the square inch. This being the case, it is shown that the mortar of the Rosedale, equal parts of cement and sand, is 34 pounds to the square inch stronger than the foreign cement, used in the proportion of one to two, and 54 cents per barrel less expensive. The last question is whether the Rosedale, one to one, is strong enough for all practical purposes to which a cement is applied. All the important masonry in America for the last fifty years has been laid in the American cement, and the fact that it has given perfect satisfaction for light-houses and culverts, sewers and bridges, in the water and out of it, shows that it meets all the cases where a good, strong, cheap, and lasting cement is required.

An Archway Shelter Through the Straw Stack.

With winter comes the piercing winds, the intense cold, and, unless well protected, the greatest suffering that the farm animals experience during the whole year. It is the season when to keep the stock warm is no less a matter of economy than to keep them well fed; in fact, they are fed in a great measure to keep up the animal heat, the food serving much the same end that coal does to the furnace. This being true, it is reasonable to infer that an animal will require less food to maintain the proper temperature of the body were it warmed in part by other means. The inference is a true one, as thousands of experiments show—in fact, it goes without questioning that farm stock, when sheltered from the cold of winter, require a considerable less food to keep them in a good, thriving condition, than do those animals that are continually exposed to the weather. Shelter then has much more in its favor than simply the humane side, which alone is enough to warrant the comfortable protection of animals. There is an appeal to the pocket as well as the sympathy in the lowing of the shivering herd. All farmers, and especially those in the newer portions of the West, do not have stables for their cattle or snug sheds for their sheep. They are called upon to make the winter as comfortable as possible for their animals, with the limited means at their command. Sheds of poles with roofs of straw are extensively used and with profit. Not long ago we saw an archway shelter, under, or through a straw stack that was evidently an inexpensive and valuable device for stock protection.

The "ground plan" is given in fig. 1, and consists of two rail pens, of the ordinary sort for the bottoms of small stacks, placed near enough together so that an archway of poles could be made between them in the manner shown in the engraving. The lower end of each pole was set a short distance in the ground, rested near the middle on the top rail of the pen, and crossed with its neighbor pole from the other pen, and was fastened to it with wire at the top and also to the rider. Over this structure the straw stack was built, and when finished had the appearance shown in fig. 2. In this way a snug shelter of considerable size was made beneath the stack under which the cattle gladly took refuge in stormy weather. The structure is a permanent one, the rails and poles remaining if necessary from year to year, or if taken down, to be rearranged again in a short time just before the thrashing is done. Such an archway shelter would not be out of keeping in many a well-kept barn-yard. If the stack is a long one a double archway may be made, and each will save many steps in doing the work of the barn-yard.

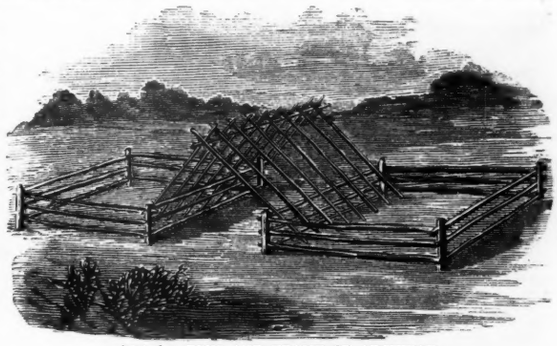


Fig. 1.—PENS AND FRAME OF ARCHWAY.

Fig. 2.—THE ARCHWAY UNDER THE STACK COMPLETE.

Well Seasoned Fuel.

Most farmers use wood for fuel, and the best time to chop, haul, prepare, and pack it under cover, is in the comparative leisure of the winter months. There are several reasons for this. One good reason is enough, but we have four. It is a great saving of fuel. By drying the wood, most of the water is expelled, and there is little loss of heat in drying it as it burns. It costs about $2 to work up a cord of wood for the stove after it is hauled to the wood pile, and it makes a difference that any one can calculate, whether a cord of wood burned green, lasts twenty days, or burned dry, lasts thirty days. The use of well-seasoned fuel makes a large saving of time and labor, and on this score alone it pays to always have dry wood. It is a long job to light a fire with green wood, even with the help of paper and shavings. This work has to be done in the morning, when time is most valuable, either for sleep or in getting an early start for the the work of the day. It is about an hour before the green wood gets dry enough to burn, and the fire ready for cooking the breakfast, warming the room, or both, a delay which is not at all satisfactory to any one. The wife or housemaid may be tempted to use kerosene to start the fire, and

too often gets severely burned, if not killed. The loss of an hour every morning, with hired men waiting for breakfast, makes a big figure in the course of a year. Look at it. Then the habit of preparing a year's stock of fuel in the cold months cultivates forecast, and is in keeping with other good habits, such as preparing for seed sowing, getting tools in order, cultivating and harvesting, all in due season. These things tell in the bank account. And lastly, dry fuel has an intimate connection with the serenity of temper and happiness of the household.

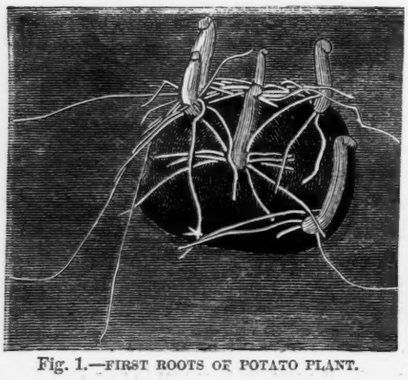


Fig. 1.—FIRST ROOTS OF POTATO PLANT.

It makes all the difference in the world with one personally, whether the woman who sits opposite him at the table, pouring tea and coffee, is made a spitfire by her daily tussle with sissing firebrands and soggy wood, or a saint by the use of seasoned fuel. It makes a great difference with the children and the servants. We are sceptical on some points, but have full faith in the use of dry fuel as a means of grace. It is not often the theme of pulpit discussion, so we drop a word here at the hearthstones of our readers: Remember there is a limit to "the patience of the saints," and burn dry fuel.

The Roots of the Irish Potato.

Last month, page 344, Professor Atwater gave our readers a short chapter on the roots of the Indian corn, accompanied by a series of illustrations, engraved from photographs taken by a German investigator, Dr. Thiel. We here show four different stages in the growth of the roots of the potato plant, by engravings taken from the same source. These illustrations, being from nature, show as accurately as can be, the position, number, etc., of the roots of the potato plant. Figure 1 represents a potato that has been in the soil long enough to have the young stems well started, and the slender roots growing from their bases. In fig. 2 the roots have greatly increased in number and

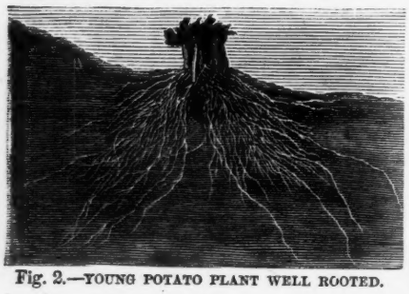


Fig. 2.—YOUNG POTATO PLANT WELL ROOTED.

length, filling the soil with a network of fibres. Figure 3 gives a later stage of the potato plant, the photograph being obtained by first removing the soil from one side of the plant with great care, to not either break or displace the roots, and then photographing the plant, with the parts thus exposed. It will be seen that the roots are long, slender and very abundant, extending over a much greater area than the tops. The last stage, shown in fig. 4, gives the potato plant after it has finished its growth. The tops having completed their growth are comperatively leafless; the new potatoes are full grown and in a cluster upon short underground stems, at the base of the plant, and the fibrous roots, having fulfilled their office, have mostly disappeared, only the larger ones showing in the photograph. The whole economy of the life of the potato is here shown. In the first place we have the tuber, the old potato, a store-house of starch and other nutritive material. When placed under proper conditions, the nutritive matter within the potato is expended in producing stems and roots—that is in establishing new plants, which are soon able to take up their food from the soil through the numerous fibrous roots. These contribute to an abundant growth of tops or vines—the above ground part of the plant. When the vines are sufficiently developed, they make preparations for continuing their kind; at their base, there start several underground stems—not roots in any sense, but as much stems as those above ground, but having no need of leaves they are leafless. Soon these stems swell at the end, from the deposition of starch and other nutriment prepared by the foliage; this deposit continues, the end of the stem is enlarged by its accumulation, and finally we have a cluster of ripe potatoes like the one with which we started.

Fig. 3.—ROOTS OF THE POTATO PLANT AT TIME OF MOST VIGOROUS GROWTH.

Liquid Manure.

One of the most successful gardeners we know of, uses liquid manure largely. He has a large tub, a discarded whale-oil cask or sugar hogshead will do, holding several barrels, sunk partly in the earth, near the middle of his vegetable garden. He has a cheap trough, made by nailing two four-inch strips together in the shape of a V, to conduct the water from his sink spout into the tub, whenever it is needed. It is not far from the well, and extra water is run from the pump into the tub, whenever it is needed. Into this tub all the slops from the chambers are emptied during the summer. Another line of cheap troughs conducts the liquid manure from the tub to any desired part of the garden. With a long-handled dipper, he stands at the tub, and waters the growing vegetables, and fruit trees, as their wants demand. He always has fine fruits and vegetables. When a house stands several feet higher than the garden, the tub or vat for holding the liquid manure can be kept wholly above ground, and the water be drawn off by a plug at the bottom of the vat. This will save the labor of dipping. The results of using liquid manure upon growing vegetables are quite astonishing. If the garden is large, and the wastes of the house are not sufficient, it is easy to increase its quantity by placing a few pounds of guano in the vat, and adding water from the well or cistern. The water should have the benefit of one day's sun, and be applied just at evening, or very early in the morning.

How to Feed Beans.—Beans, it is well known, form one of the most nourishing articles of diet that comes to the table, and the regular weekly appearance of the baked beans, generally on Sunday in New England homes, attests the high appreciation in which they are held. Beans are much more used in this country for human food than for our domestic animals. They do not take to them kindly, with the exception of sheep, which are very fond of them and their pods and stalks also. Villagers and farmers often have small lots left over from the winter stores, and are in doubt how to dispose of them. Pigs, hens, and cows will not refuse them if mixed with other food. The best method of disposing of old beans is to boil them until they are sufficiently soft, and then mix them with scalded Indian meal, or other provender, and use the mash for feeding pigs and poultry. They are excellent to make flesh and eggs; and, in this shape, the last remnants of the bean bag may be turned to profit in the pig-pen or poultry-house.

Fig. 4.—POTATO PLANT NEAR THE CLOSE OF THE SEASON.

The Striped Blister-Beetle.

The advent of *the* Potato-beetle (*Doryphora*), seems to have driven out of mind the fact that we have always had potato-beetles, and in some years in respectable abundance. There are several species of the genus *Lytta* that infest the potato and kindred plants. These insects are related to the European Blister-beetle, known as the Spanish Fly or Cantharides, and are said to possess similar blistering properties, although they have never come into general use as a vescicating agent. During the present season we have received numbers of potato insects to be named, all being the Striped Blister-beetle (*Lytta vittata*); this seems to have been especially abundant throughout the Middle States, in some cases proving quite as destructive as *the* "potato-bug," as it destroyed all the foliage, and that could do no more. But this Blister-beetle, unlike the other, is most destructive in its perfect or beetle state; indeed but little is known of the larval or grub state of this insect, beyond the fact that it passes its existence in the earth and probably feeds upon small roots. The engraving shows the general form of these Blister-beetles; some are black throughout, others are gray, one has a light margin to its wing cases, while this one has both a marginal and a slender central stripe on each wing case; the colors being light-yellow and black.

STRIPED BLISTER-BEETLE.

These insects may be poisoned with Paris Green and London Purple, but it does not seem to be so effective with these as with the regular potato-beetle.

The best method of disposing of them, when they are abundant, is to drive them from the field. A windrow of straw or litter being placed at one side of the field, several persons, each armed with a leafy brush, march through the field abreast, beating the vines as they go. Though the insect can fly, it prefers, especially after a full feed, to walk, and if the driving be not too rapid, nearly all the insects in the field can be made to take up their march toward the windrow. If the operation is carefully performed, nearly the whole number of insects may be made to collect in the straw as a resting place, which is then to be fired; thus large numbers of them may be destroyed without the use of poison. A repetition of this operation will so clear a field of the insects that the few which remain will not be notably destructive. Should the other species occur at any time, a similar treatment will be found effective for them. It is said that this insect prefers all other varieties of the potato to the Peachblow, and that they will not touch the vines of that if any others are in the neighborhood.

THE PURPLE CONE-FLOWER (*Echinacea purpurea*).

The Purple Cone-Flower.

Much nonsense has been written about prairie flowers. The majority of the flowers of our western prairies are coarse and belong mostly to the Family of the Sunflower and, like that, are in a large majority yellow. Most of the Cone-flowers (*Rudbeckia*) are yellow, but there are two purple ones separated from *Rudbeckia* and placed in a separate genus, *Echinacea*, a name which has reference to the hedge-hog character of the disk of the flower. The engraving shows the flowers of nearly the natural size; the center of the flower at first is rounded, but soon becomes pyramidal and pointed. This portion is of a dark maroon color, while the rays are of a light rose purple. The general aspect of the plant is that of the Rudbeckias. It forms a very ornamental plant in cultivation, but on account of its large size, growing to the hight of four feet or more, is only suited to wide borders. A clump standing by itself is very effective. It blooms in July and continues through the summer. The species here figured, is the *E. purpurea*; there is another and a narrower-leaved species, both being found in the Western and Southwestern States. Under the name of "Black Sampson" the root is used by the herb doctors, but it is not employed in regular practice. Like many other perennials, this, in order to produce the best effect, should be undisturbed for several years. In rich soil it will soon make a strong and vigorous clump, and may stand by itself or be combined with other tall growing plants of similar character, and produce a very pleasing effect.

BLACK-CAP RASPBERRY—THE "GREGG."

Black-Cap Raspberries.—The Gregg.

There is perhaps no fruit about which tastes so much differ as they do with respect to the Black-cap Raspberries. While many prefer them to the red varieties, others find them positively disagreeable. They belong to a different species from the red varieties, and are as unlike in flavor as they are in color and general appearance. The black varieties are derived from *Rubus occidentalis*, often called Thimble-berry, which is found wild and, in the Northern States at least, extends entirely across the Continent. It differs from the common native red species in propagating itself by rooting at the tips of the long curved branches. Of this species there are many varieties in cultivation, some of them showing but little improvement over the wild fruit. Among the newest as well as the finest varieties of this class, is the Gregg, which is said to have been found growing wild on the farm of Messrs. R. & P. Gregg, in Ohio County, Indiana. This variety, as we have seen it on the grounds of Mr. E. P. Roe, is certainly very superior in size, productiveness, and the quality of the fruit, to any other black-cap that we have examined. With rather an aversion to fruits of this class, we find the Gregg quite acceptable; it is more juicy, and the seeds seem to be smaller than in any other. The engraving, which is from a photograph of a

cluster from Mr. Roe's grounds, is of the real size. So far as we are aware, all of the cultivated varieties of this raspberry have been found wild. If there have been any attempts to improve it by cultivation, we have not heard of them. Sometimes, as with the Blackberry, albino, or whitish forms of this fruit are met with, and there is a set of yellow-caps, but none appear to have become popular.

Notes from the Pines.

Whoever has occasion to pass the broad brackish marshes, or "meadows," as they are called, which lie near New York City immediately west of the Hudson, is attracted by the great abundance of large Hollyhock-like flowers of the Rose-Mallow; it is the Swamp Rose-Mallow (*Hibiscus Moscheutos*). The appearance of these flowers indicates that midsummer has come. In their wild state they present considerable variety, the usual color being rose-pink, varying greatly in depth of tint, and occasionally a white one is seen. Usually the white varieties have a purple spot at the base of their flower, but one of my neighbors was so fortunate as to procure one which was white throughout. Even the ordinary form is desirable as a garden plant, and with the white varieties a pleasing group may be made. We have received as *Hibiscus flavescens*, what is probably a marked form of this plant. The stems in this are purplish, the leaves much narrower, and the flowers before opening have a very light yellow tinge, scarcely perceptible except by contrast with pure white. When transferred to the garden, the Rose-Mallow grows much taller than it does in its native marshes, and is really a desirable plant in places where there is room for so large a clump as it will make. This plant illustrates a point that I have often mentioned, namely: that plants taken from wet grounds, and which in their wild state are never found in any other situation, are greatly improved by being transferred to the dryer soil of the garden. A remarkable instance of this is afforded by the common

Cardinal Flower (*Lobelia cardinalis*).

Some roots of this, taken from a swampy meadow and brought into the garden only a few rods away, are now (Sept. 1st) in full bloom with their strong, vigorous stems at least four feet high, and with a spike of its intensely scarlet flowers of a size that I have never seen equalled by the plant in its native localities. The Cardinal-flower is common all over the country, and illustrates the fact that to make a showy garden, one need not of necessity be at an expense for plants, as one with a little industry and observation, can find among our native plants sufficient to stock a large garden in a manner that will leave nothing to be desired in the way of beauty and variety. But few persons, even those who live in the country, seem to be aware of the great beauty of the wild flowers about them, and it is only when they have been brought into notice by florists, and a price is put upon them, that they seem to be appreciated. Not only are these wild plants increased in size and beauty by being placed in garden soil, but their period of bloom is often wonderfully lengthened. The common Bird-foot Violet (*Viola pedata*), when left in the fields has its time of flowering and is done with it, but in the garden it remains in flower all summer long. To be sure, this late bloom is not so abundant as the earlier one, but one can hardly go to a clump of these plants in a garden, without being able to gather flowers from it....It is but a few years ago that we were gladly paying a dollar for a small plant of a new grass,

The Japanese Striped Eulalia.

Some plants when they get common are apt to lose in our esteem, not so with this beautiful grass. I saw not long ago in the grounds of Woolson & Co., a row of this grass nearly two hundred feet long; it was as tall as one's head, and presented a bank of variegated foliage that was most pleasing to behold. Indeed it was as much handsomer than the little plants, as the mass was larger. Aside from the beauty of this in the garden, its flowers are among the most desirable for grass bouquets, but in order to have them at their best, they should be gathered very early; in fact, before the flowers are fairly opened. This early gathering of the flowers of grasses is a matter worth attending to by those who would make use of them for winter ornaments, and I think that it is one secret of the great superiority of California Pampas-Grass plumes, as they have a softness and brilliancy wanting in those that have been exposed to the weather.

Grasses for Winter Bouquets.

The Ravenna-Grass (*Erianthus*) that, in our severe climate, is the best substitute for Pampas-Grass, which is not to be depended upon in the latitude of New York, has its flowers vastly improved by this early gathering. I have found that by opening the sheaths which surround the clusters, and thus anticipating the natural period of blooming, that the flowers are not only more plumy, but they are of much better color then when allowed to open naturally, and the same may be said of the flowers of the common Reed (*Phragmites communis*) of our marshes. By taking the flower clusters of this very early, the down of the flowers remains fast, and obviates the annoyance which ordinarily results from its shedding the down when thoroughly dried in the warm air of our dwelling rooms.

In the matter of ornamental grasses, too, one need not resort to exotic plants to get a pleasing variety. The Reed is often found in almost all marshy districts, while in dry and sandy localities the Tall Panic-Grass (*Panicum virgatum*), is abundant. This also greatly improves in cultivation, and its light and graceful flower clusters add a finish to a grass bouquet which cannot be imparted to it by any other species. With these two, and several smaller grasses, all taken very early in bloom, one can make a very handsome ornamental cluster. In drying grasses for winter use, it is, as a general thing, better to hang them up with the tops downward, and they should always be placed where they will not gather dust. In the abundance of

New Lilies from Japan,

and elsewhere, we are accustomed to look upon some of the old garden favorites as coarse and common. Indeed the old Tiger Lily is now seldom to be met with, yet for making a mass of brilliant color, what is more desirable? Better than the common form of this lily, is the variety called *splendens*. This has more compact flower-clusters, the plant is more robust and erect than the common kind, and a mass of this seen against a background of dark foliage is most striking. The Double Tiger Lily is very effective in producing a color effect, but it should be seen at a distance where the raggedness of the individual flowers will not be noticed. In passing a Broadway florist's store the other day, my attention was arrested by

A Mass of Pure White Flowers,

which at first sight I did not recognize. Upon closer inspection I found they were that form of the common Japan Lily (*Lilium speciosum*), known as the variety *præcox*. This, which is not so common as it should be, has rather smaller flowers than the ordinary form, is more regular in shape, its petals being symmetrically recurved, and of a pure white. Those in the florist's windows were disguised by having the anthers removed, a precaution necessary with all light colored lilies, at least when they are to be shaken about or transported, else the dark brownish pollen which is so copiously produced, will fall upon and greatly disfigure the petals. This variety, thus treated, is admirable for use in large floral decorations, and I know nothing which gives so large a mass of pure white and is at the same time so delicate in texture as this. This variety is equally hardy with the ordinary kind, and although it is called *præcox*, I cannot see that it is (as its name implies), any earlier, even if quite so early as the other varieties of lilies.

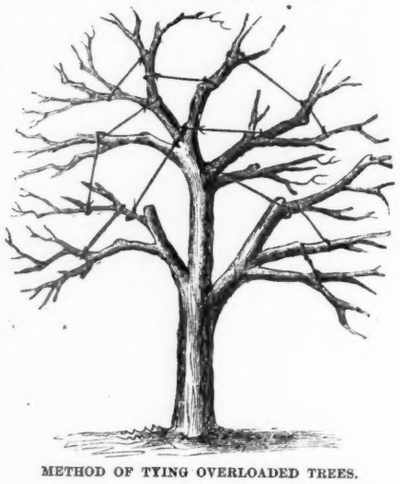
I think that the *American Agriculturist* was the first to bring into prominent notice that variety of *Lonicera Japonica*, the Japanese Honeysuckle, known as

Hall's Honeysuckle.

It is a satisfaction to have a plant as well as a person, on better acquaintance, fulfill its early promise; this Honeysuckle improves with every year's acquaintance. It grows rapidly, it climbs high, it has good foliage, it blooms early, and it blooms all the time, its flowers are fragrant, and—what more will you have? I know that some people will find fault because its flowers are not red or of some other color than the delicate white they have at first, but until somebody can make a honeysuckle to order, I shall stick to Hall's.

Staying Over-Loaded Fruit Trees.

The apple trees are breaking down under their loads of fruit. It is not worth while to let them. Tarred rope yarn is cheap and strong. One strand will hold a man's weight, and that is more than several bushels of apples. If, in applying the cord, you distrust a single strand, take two or more. First attach the cord to the lower limb, then draw it over an inner, upper crotch, place the toe of one



METHOD OF TYING OVERLOADED TREES.

foot under the limb, and lift it up a little, tighten the cord, not taking too much weight off the limb, and make fast with two half-hitches to the upper limb or crotch. Proceed in this way with every over-burdened limb which you can get at, and you will find the tree much better supported than it would be by poles. The accompanying cut shows the principle upon which this staying is done, so that one part of the tree shall support another.

An Excellent Early Squash.

The early or summer-squashes are, as a general thing, very poor in quality, being coarse, watery, and flavorless. This spring Mr. Gregory, of Marblehead, who has a way of introducing fine squashes, sent out a variety called the "Essex Hybrid," which is claimed to be a cross between the Turban and the Hubbard. Of the quality of this squash Mr. Gregory spoke very guardedly, as he had not cultivated it himself. He sent us some of the seeds for trial, and we found it to be quite as early as the bush squashes and in every respect vastly superior to them. The squash has a remarkably symmetrical form, being somewhat like the Turban in shape, but more regular. Its skin is at first whitish or cream-colored, turning to orange, the flesh very thick, with but a small cavity for the seeds. In quality it ranks with either of its alleged parents, and well sustains the reputation of Mr. Gregory as an introducer of fine squashes. The vine, as with the winter varieties, needs a plenty of room.

Ripening the Seeds of Trees and Shrubs.—Sometime ago our valued correspondent, Jean Sisley, Lyons, France, sent to the "*Revue Horticole*" a hint which some may find useful in this country. If it is feared that the season may not be long enough to allow the seeds of trees and shrubs to mature, he cuts the branches bearing the seeds which it is desired to preserve while the fruit is still green. These he places in pots of soil, as if they were cuttings, keeping the earth properly moist, or in bottles filled with water. The pots or bottles are to be placed in a cool greenhouse, where the seeds will in due time come to perfection. This method will be found useful with berry-like seeds and others which the birds take as soon as they be-

gin to ripen. We have no doubt that some herbaceous perennials, that bloom so late that they rarely afford seeds, might be advantageously treated in the same manner.

Planting Trees in Autumn.

Each year we are asked, "Do you approve of fall planting?" An answer, "yes" or "no," cannot be given to many questions asked us on such matters of practice. As to tree-planting, and also the shrubs that bear small fruits, it is only on our northern border, where the winter is prolonged at both ends, and commences with as much suddenness as it breaks up, that fall planting may not be done. Late October and early November are often the portion of the year in which out-door life is most enjoyable, and in which out-door work seems to tell better than at any other. Such golden days! Then the soil has not yet lost the warmth that it has been accumulating all summer, and to plant in it is like giving the trees bottom heat. It is rarely too dry, and if properly drained cannot be too wet. In proper tree-planting the fingers often do a part of the work in filling in among and around the roots, and it makes the greatest possible difference whether the soil be cold or warm. Some will admit every argument in favor of fall planting, but add as an insuperable objection: "If we get our trees in the fall, the leaves will be stripped." This stripping of the leaves is needlessly made a bug-bear. A nurseryman who regards his reputation, who expects his customer to come again, would not strip the leaves from his nursery trees, to their injury, *if he could*. Those who observe closely know that the preparation of the leaf for its fall is a most interesting operation. When the tree is in full growth, a leaf cannot be removed without some force; if pulled away in midsummer, it will be likely that some of the tender bark will come with it and a wound be left. Wait until the leaf has done its work, and examine it in October; there will be seen a distinct line between the leaf and the now ripened bark of the stem; a slight pull, or a lifting up as one would lift a pear to see if it was ripe, and away comes the leaf, leaving a clean scar, over which the process of healing has already commenced. When the leaf has completed its work and is *ripe*, it makes no difference whatever whether we remove it by a brush with the hand, or wait until the winds and rains beat it off. This matter of stripping of the leaves need give no anxiety, simply for the fact that the stripping cannot be done until the leaves are ripe and have nothing else to do. The roots of trees, placed in the warm soil in autumn, are not mere dead sticks stuck in the ground. A change and a certain growth is taking place. As an illustration of this, put a currant cutting in the ground in September; it looks only like a dead stick, but take it up in November, or just before the ground freezes, and the lower end will show a callus, and often small roots will have started, but the cutting is, to all appearances, dormant. So with trees. No matter how carefully they may be taken up, some roots will be broken and torn. If in planting in autumn we cut, as we should in planting at any time, every broken root back to a sound part, leaving a clean, smooth wound; in a short time these roots will begin to repair damages, and before winter checks all action, much will have been done towards overcoming the effects of removal. In the warmer States, anywhere south of 40°, in most years planting may continue the greater part of the winter without harm to the trees.

The Nettle Tree or Hackberry.

There is no native tree of which so many specimens are sent to us for a name as of the Hackberry (*Celtis occidentalis*); although it is found in most of the states and territories, it seems to be no where abundant, and is but very little known even to those who are familiar with trees. In general appearance the tree is like the Elm, and belongs to the same botanical family, but it differs from the Elm in producing a small berry about the size of a pea. As found in the Eastern States, it is a tree of moderate size, but further West, specimens are sometimes found 80 feet or more in hight. As a tree for ornamental planting it is desirable, but it is not very valuable as a timber tree, as the wood is not durable when exposed to the weather. The shape of the leaf is shown in the engraving, which gives a twig with the leaves and fruit of the natural size. At one side are shown the very small flowers, which appear in early spring, in small clusters; some of them are staminate only, while others are perfect. The fruit, which, when fully ripe, is a blackish purple, has a very thin, sweetish pulp,

THE NETTLE TREE OR HACKBERRY (*Celtis occidentalis.*)

and is sought after by birds and also by children. Although the tree is so little known, it is remarkably well provided with names. Besides those already given, it is also known in different parts of the country as Beaver-wood, Hoop-ash, Many-berry, False-Elm; and in the Southern States it is called Sugar-berry and Sweet-gum, this last being a name also applied to other trees. The name of the French Canadians, *Bois inconnu* (unknown wood), would imply that it was little known to them. The tree varies so much in shape and thickness of its leaves in different localities, that four species have been described from its different forms, but they are all local modifications and are now properly so regarded. One peculiarity about this tree is, that one seldom finds it in groves or clumps; indeed it is rare to find two within a radius of many miles. George B. Emerson says: "The tree might be described to one who wished to be able to recognize it, as an Elm bearing purple, sweet cherries, which continued on the stem through the winter." According to Arthur Bryant, the most important use for the wood of this tree is to make the flat hoops of flour and fruit barrels. He says that it is sometimes sawed into lumber to use for inside work, but that its tendency to shrink and swell with the moisture of the atmosphere, makes it of little value. The European Celtis, on the contrary, is much valued for the character of its wood, and is cultivated in some parts of France. Its long suckers are used for handles to hay-forks, to make whip stocks, ram-rods for muskets, walking sticks and carriage shafts, and the wood is a favorite with the wood carvers.

The Treatment of Celery.

Those who have adopted the modern method of growing celery upon the surface of the ground, instead of placing it in trenches, often make a mistake in banking it up too early. If celery be banked up in growing weather, the central portion will continue to grow at the expense of the rest, and the consequence will be that the outer stalks are pithy and worthless. Celery intended for winter use requires no banking up where it grew, it only needs to have its stalks straightened up, by bringing some earth to them with the hand; this operation is known to gardeners as "handling." If this is not sufficient to keep the stalks upright, enough earth may be drawn to them with a hoe to hold them in an erect position. Celery will stand a moderate frost without injury, but hard freezing will kill it. Celery that has been straightened up, will, after a few days, remain erect, and be ready to put away for the winter. It may be stored in trenches, a foot wide, deep enough to hold the plants, and as long as may be needed. The plants are stacked in this trench as close as they will stand, and a covering of leaves, straw, or bog-hay is put over it—light at first, but increased as the weather becomes severe. For family use, a very neat way is that described in our columns a few years ago by Peter Henderson. Boxes are provided, about nine inches wide, of a hight a little less than that of the celery, and of a convenient length to handle. A few inches of sand or good soil is placed on the bottom of the box, and the plants are stood erect and close together, as in trenches. This method is practicable only in a cool cellar, and the boxes, if placed side by side, should be so far apart that there can be no danger from heating, which would spoil the celery.

"Madeira Nut."—Mrs. "W. D. E." asks when to plant the "Madeira Nut." This nut is generally known as the "English Walnut," though the tree is not a native of Great Britain, but probably of oriental origin. We much doubt if the nuts, as they are found in this country, will germinate, as, like other nuts, they should be placed in sand or earth as soon as ripe, in order to preserve their vitality. They should be thus kept during the winter and planted in the spring. In Europe, where many varieties are known, the trees are grafted, in order to produce fruit of desirable kinds, much in the same way as with many varieties of fruit trees. If our correspondent only wishes to have a tree or two, it will be better to purchase them, as they are grown by the large nurserymen and kept by them for sale. In the Northern States they rarely produce fruit, but are productive in Virginia and southward.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Foot-Rest and Slipper-Box.

Most men like to put their feet upon a support that will bring them some distance from the floor, when they are to take the most solid comfort that a sitting posture can give. A rest for the feet makes a tired man more at ease. In view of this fact, and that chairs are not fitted for this foot service, but are liable to be scratched and injured, various kinds of foot-rests have been made, some of which are very elaborate and expensive. We have a foot-rest in use which we made ourselves, and though not in the highest style of household art, is at the same time neat and useful. It is made as follows: A pine box about 16 inches square was selected and taken apart. New lumber might have been used had it been at hand, and no old boxes in the cellar. The side pieces were sawed as indicated by the dotted lines in figure 1, and when brought together again gave the box a somewhat pear-shaped and pleasing outline. The bottom was then cut down and fitted in, and the cover fastened on by two, small iron hinges. This completed the new box, or foundation, as one might say. The covering was then put on, which may consist of any kind of cloth to suit the taste. The top, or cover, should be thoroughly padded, as upon this the feet are to rest. The sides may also be filled out a little, to give the whole a plump and pleasing appearance.

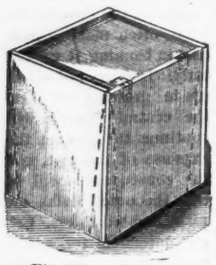


Fig. 1.—THE BOX.

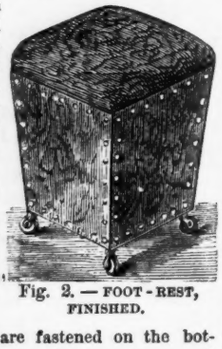


Fig. 2. — FOOT-REST, FINISHED.

Finally, small casters are fastened on the bottom by means of which the Rest may be moved readily about the room. This Foot-rest serves a good purpose as a stool, and the interior of it is a handy place for putting away the slippers when they are not in use. In looks it is not objectionable as an article of furniture; but as a rest for the feet after a hard day's labor it is something that would be greatly missed if it should be taken away.

Are Your Closets Ventilated?

There is nothing so handy in a house as an abundance of large, roomy closets; but because they are handy and extremely useful they are apt to be abused. There are many things, which, as a matter of course, are always put into a closet, of which the articles of outward wearing apparel make a large part. There are also things which ought not to go into a closet, *i. e.*, a closet adjoining, or closely connected with, a living or sleeping room. Of such are all soiled under-garments, the wash clothes, which should be put into a large bag for the purpose, or a roomy basket, and then placed in the wash-room or some other well aired room at some distance from the family. Having thus excluded one of the fertile sources of bad odors in closets, the next point is to see that the closets are properly ventilated. It matters not how clean the clothing in the closet may be, if there is no ventilation that clothing will not be what it should be. Any garments after being worn for a while will absorb more or less of the exhalations which arise from the body, and thus contain an amount of foreign—it may be hurtful matter—which free circulation of pure air can soon remove; but if this is excluded, as in many close closets, the effluvia increases, and the clothes, closets, and adjoining rooms in time possess an odor that any acute sense of smell will readily detect. Every closet in daily use in which the night-clothes are hung by day and the day clothing by night, should have an airing as well as the bed. If the closet can be large enough to admit of a window—and it is in some cases—an ample provision for sunlight and a circulation of pure air is provided in the window, which should be left open for a short time each day. In the case of small closets a ventilator could be put over the door or even in it. In many cases such precautions for pure clothing are not practicable, and the next best thing is, to see that the door of the closet is left open for a half hour or so each day, at that time when the windows are thrown up and the large room is purified with fresh air from out of doors. In this way: first, by keeping out clothes intended for the wash; and second, daily changing the air, the closets may be comparatively pure.

Home Topics.

BY FAITH ROCHESTER.

Baby's Bow Legs.

These need not cause anxiety in all cases. If the child is healthy, and has good, nourishing food and pure air—the two great essentials for making good blood—it will probably outgrow its bow legs naturally enough as its strength increases. Rubbing the legs with your hand at night and in the morning may help to strengthen and to straighten them, holding them straight as you rub them. If the case is pretty bad, the two legs may be bound together with comfortable bandages during sleep, rubbing them well before and after binding them. If the child is still quite young, it may be kept from standing on its feet for a few months, giving Nature time to straighten the crookedness while the limbs are growing stronger. A carriage and a high chair are helps toward carrying out this plan.

All the things that I have mentioned as curative agencies may well be used as preventives. A healthy child, with wholesome food, and pure air to breathe, if kept from standing and walking while too young and weak, will not have bow legs. Scrofulous children are more likely to suffer in this way, and those that are very fleshy. Don't take pride in your *fat* baby. Excess of fat is really a disease, instead of a sign of health. Fatten your pigs as much as you fancy, but do not deliberately fatten your children. Give them plenty of good growing food, and they will be plump enough for symmetry and not too heavy for comfortable activity. It is no wonder that the little legs bend under the heavy weight of some fat little toddlers. Such children should not be encouraged to stand or walk until they have grown strong enough to do so of their own accord, and then should not be allowed to walk too much.

I hear of many cases where quite badly bowed legs have gradually straightened themselves without artificial help. Others think their children would never have outgrown the defect if they had not resorted to bandages or splints. Some have splints fitted to the ankles and bound around them, but I think it can be necessary to resort to this measure only in very confirmed cases. I have h ard of one little girl who was very badly bow-legged when three years old, but had entirely lost the defect a few years later. Her mother began to rub and bandage her legs together every night, and kept this up a few months until a cure was wrought. It will not do to put a baby into a jumper too young, nor to let it stay in too long a time. Probably eight or ten months is an early enough age for this exercise. If the child remains too long in the jumper its legs become weary, and if not strong they bend under its weight.

They grow strong under the exercise, but they are liable to grow crooked also. A safer exercise, though not as neat and pretty, is creeping. This is Nature's way of strengthening the limbs preparatory to walking, and I should be sorry to have it omitted from the list of baby's accomplishments.

Wanted—Good Graham Flour.

A year ago the *American Agriculturist* told its readers that much of the graham flour sold throughout the country was a poor compound of various mill stuffs, instead of the genuine "graham" of pure unbolted wheat meal.

"If it is bran that they want, give 'em bran," I heard a house-keeper say, who really did not care to have her family like the graham. This seems to be the motto of the millers also. I sifted some of their graham lately, and just half of the mixture that had been bought as "winter wheat graham" was pure bran, and very coarse bran, too. I am free to say that this is not what I want, and I am unwilling to give it to my children. In our Western cities and towns, where beautiful wheat abounds, and where the nicest of white flour is made, it is almost impossible to get genuine graham flour. I suspect that the "new process" of grinding works against the graham interest. The high grinding takes off a cleaner, coarser bran. Originally, we were taught to eat the bran because so much of the most nourishing part of the wheat—the gluten—was clinging inseparably to it. The bran by the new process is stripped so clean it is good for little on its own account except for those who need anti-constipating food. As waste matter, taken with other concentrated food, it keeps the bowels in good condition, and so is almost essential to people who have sedentary employments. The bran, to be sure, contains elements needed in the human body, but excellent authorities assure us that it usually goes through the body undigested, and if coarse and excessive, is apt to scour along with it nutritious material which would remain and nourish the body but for the mechanical action of the bran. I think it is best to sift out most of this bran, all of the coarse bran, if you are cooking for healthy people and children. Our sieves leave a deal of the fine bran and all of the gray gluten. It is aggravating, though, to be so swindled, and I think we ought to make a buzzing about the millers' ears. Examine their so-called graham, and you find that it is mostly bran and "shorts" (or "canaille," or "middlings"—three different names for the same thing, as I understand it,) with a little corn meal (usually the white kind), and a little cheap, fine flour. When this is the best I can get, I sometimes mix it with good white flour, half and half, thus diluting the bran enough to make it palatable. Even so, it is better than to live on white flour alone. Sometimes I sift half of the graham and add a little fine flour, and sometimes I sift it all and use it alone.

Mixing in the Bran.

I complained to a grocer lately of the branniness of his graham flour. He said others had found the same fault, and he "guessed the millers did *put in* too much bran lately!" as though bran had to be *put into* graham! Another grocer told me it was impossible for him to get better. He said that they could get what he called very nice graham, if the millers would let them go to the mill and take the wheat when first ground, before any bolting had been done. But the millers tell him that it won't do. They have to take an extra quality of wheat to make graham—something nicer than they use to make gilt-edged flour, probably! I feel like declaring emphatically that "I know better!" It happened to me once to live close beside an excellent mill, which ran its big machinery night and day, except on Sunday. I saw the freight cars left beside it every day and loaded with barrels of best quality, new-process flour, and shipped to Eastern markets. I had one sack of graham flour let down warm into the bag, just as it was ground, before it had passed a single bolt (or sieve), and this was the best graham flour I had seen in the West. There are first-class groceries, however, where such graham can be obtained, and we are usually so fortunate as to get it. Lately I have been sojourning in different places, and sympathized with the complaints of my friends.

Fine "New-Process" Flour.

I wonder if there has not been some mistake in the general abandonment of the old style of grinding. It costs an immense sum to put in the new-process machinery (to buy the patent or something), so that the very fine and white patent flour has a high price put upon it. This is what the millers seem mainly anxious to sell, and it is

praised up to us as more nutritious than the common "grade," or "straight," or "family" flour. They tell us it "goes farther" and is really cheaper than the "straight" flour, though it costs us considerably more than a dollar higher on the hundred-pound sack. From two men, proprietors of two different first-class mills, I have received testimony to the contrary. So I shall go on using the best straight or family flour. Here it is the "White Rose" or "Snow Flake," or these are the kinds I usually get, though I know there are others just as good. I fancy that light, sweet bread made of this really tastes better than the whiter bread, made of the finer flour, and I am convinced that we get quite as much, if not more, nourishment from it, while in our family it is a saving of at least $10 a year—perhaps $15—which would make quite a valuable yearly addition to our library.

There is no doubt, however, that this new-process "gilt-edged" flour is better in every way as food than the old-fashioned superfine flour, a flour equally fine and white, by the old process. The other was simply elegant starvation diet, as it contained very little except pure starch. By the new process of bolting the middlings, a much larger per centage of gluten is obtained, and this is the real muscle-making, strength-producing part of the wheat. As graham is compounded nowadays, it may be doubtful whether it contains, bran and all, pound for pound, any more gluten than the fine flour. Were the great prophet of grahamism, Sylvester Graham, after whom unbolted flour takes its name, now alive, he would utter a strong protest against the use of his name upon the majority of the products that are now called "graham."

Grass Stain Removed.

I thought grass stain was hopeless. I have asked experienced people several times if anything would take the stain of green grass from children's clothes, but without gaining the desired information until within the last month. Lo! boiling water will remove the color. Pour boiling water through the stain and it sets the green coloring matter loose, rinsing it away. I tried it on a large stain upon the front of my little girl's white dress, and easily removed every trace of the grass, rubbing it a little in the hot water. Grass stain, after washing with soap-suds, makes a dirt-colored mark, and remains an ugly blot on children's white clothing.

Iron Rust Stains.

Squeeze lemon juice into a cup, add a pinch of salt, and rub the stain in this. Then wash in clear, tepid water. Sponge goods that cannot be rubbed. Lately I saw a black cashmere dress badly stained with yellow spots of iron rust, on the black silk trimming as well as upon the cashmere. The color was entirely restored by sponging with lemon juice and salt.—[With some blacks the matter would be made worse. A piece of the material having iron rust should be tried first.—EDS.]

More Mouse Traps.

"R. B. K.," Columbia Co., Wis., has tried several devices or traps for catching mice, and finds the one that he has contrived himself the best of them all. Our Wisconsin friend's trap is shown in figure 1, and is a "dead fall," so made as to do away

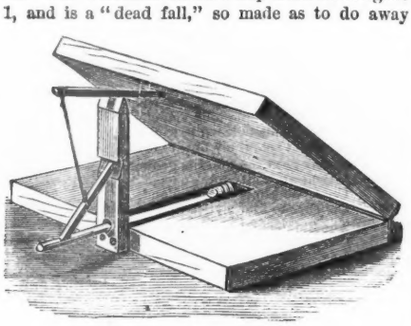


Fig. 1.—DEAD-FALL TRAP.

with the uncertainty of catching the mouse when the ordinary "figure four" is used. The trap is made of two boards 8 inches wide and a foot or so in length, fastened together at one end by a leather hinge. A slot is cut in the middle of the bottom board for the spindle to rest in. A piece of lath with a hole in one end for the passage of the spindle, is nailed on one end of the bottom board. The other parts are arranged as in the engraving, which shows the trap set. The bait is placed on the end of the spindle near the center of the bottom board.

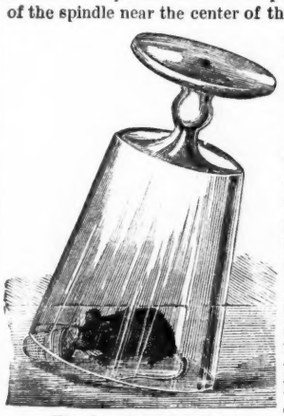


Fig. 2.—GOBLET TRAP.

Another form of trap is shown in figure 2, and consists of an inverted glass drinkinggoblet, with one side raised a little distance by placing a lady's thimble under it. The thimble should be so placed that the glass will rest upon it near the tip, that the least movement of the thimble will cause the goblet to fall. A piece of meat is crowded into the thimble, so that it can not be reached by the mouse until he has passed under the goblet, when by its nibbling the thimble is moved, the glass falls and the mouse is caught. This description came from a lady whose letter and address, we regret, is not at hand.

Grasses for Decoration.

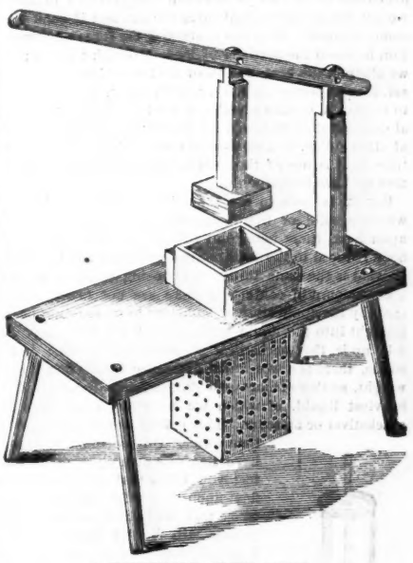
A bouquet or vase of properly dried and tastefully arranged grasses of the more graceful sorts, is a very pleasing decoration for the parlor or sitting-room in winter. The beauty of a grass depends largely upon the delicacy of its flower clusters, and their graceful and orderly arrangement in the *panicle* or "head." As a type of beauty among the larger grasses, a long feathery plume of the Pampas Grass may be chosen, and indeed it is a very pleasing object when preserved of its original shape and color. We must here enter a protest against the violation of nature by dying the plumes of grasses any color whatever. They, to our taste, can not be improved upon by being colored a deep crimson, an unnatural green, unpleasant black, or any other color. Grasses for their greatest beauty should be gathered just as they are fully in flower, and hung up or spread out to dry in a place that is free from dust. If a grass is gathered after it is beginning to mature its seed, the floral parts will become brittle and soon fall to pieces, and fail to be the objects of beauty that they would be if gathered when just at the opening of the flowers. There are a number of native grasses that are worthy of a place in such a collection. In general, it may be said that any grass that is attractive for its delicacy, grace, and color while growing in the field, will not be disappointing when it is tastefully arranged in the house.

Chapped Hands.—The raw winds of late autumn often produce in the hands of those who are much exposed to them that roughness and cracking of the skin known as chapping. If nothing is done to prevent, and the person is obliged to have his hands frequently wet and dried, the cracks will often get deep and be painful. Corn husking is frequently accompanied by sore hands from this cause. As both a precaution and cure for chapped hands we have used the following with benefit: Wash the hands, and the face also if it is inclined to chap, with Borax Water, and afterwards rub with an ointment made by melting Mutton-tallow (or suet), and then gradually adding an equal quantity of Glycerine, stirring the two together until cool. For the hands, this mixture can be best applied at night, using it freely, and warming it in by the fire, after which an old pair of gloves can be put on to keep the bedclothes from being soiled, and also make the skin of the hands softer. An excellent Glycerine ointment for chapped hands is made by melting, with a gentle heat, two ounces of Sweet Oil of Almonds, half an ounce of Spermaceti, and one drachm of White Wax. When melted, remove from the stove, and add gradually one ounce of Glycerine, and stir until the mixture is cold. The ointment can be scented with any perfume to suit the fancy. Keep in wide-necked bottles.

Household Notes and Queries.

ENTERTAINING COMPANY.—The whole philosophy of hospitality is summed up by Emerson in the following: "I pray you, O excellent wife, not to cumber yourself and me to get a rich dinner for this man or this woman, who has alighted at our gate nor a bedchamber made ready at too great a cost. These things, if they are curious in, they can get for a dollar at the village. But let this stranger see, if he will, in your looks, in your accent and behavior, your heart and earnestness, your thought and will, what he cannot buy at any price, at any village or city, and which he may well travel fifty miles and dine sparingly and sleep hard, in order to behold. Certainly let the board be spread and the bed be dressed for the traveller but let not the emphasis of hospitality be in these things. Honor to the house when they are simple to the verge of hardship, so that the intellect is awake and sees the laws of the universe, the soul worships truth and love, honor and courtesy flow into all deeds." One of the greatest comforts of having a home should be that in it we have a place for friends and even strangers—rooms, more than supply the needs of the family and extra "leaves" to the extension table. The secret of true hospitality, as Emerson has stated, is in its coming from the heart.

A HOUSEHOLD PRESS.—A subscriber from Kansas sends sketches and descriptions of a household



A HOUSEHOLD FRUIT PRESS.

press for obtaining the juice from small fruits and for other uses, which he has employed for some years. A hard-wood plank 30 inches long and 11 inches wide serves for the bottom. A hole six or seven inches square is made in the plank near its middle. The plank is raised upon four legs, and a box fitted into the hole, as shown in the accompanying engraving. An upright piece is fastened at one end of the base piece, and to the upper end of this a lever is pinned. The lever carries a "pounder," the head of which is square and just fits into the upright, perforated fruit box. In using the Press the currants or other fruit are placed in a strong cloth and afterwards in the box, when the lever and pounder is brought down and the juice is quickly and thoroughly expressed.

A POT OF ENGLISH IVY makes one of the most agreeable and cheap ornaments for the sitting-room in the winter. A common four, or five-inch pot with a strong plant can be bought of the florist for fifty cents or less. It is easy to make a basket of interlacing coarse wires to hold the plant.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

We have been for a while somewhat off of our regular track, and have talked about insects and other things, but now that the weather is getting cooler and the evenings longer, we feel more like reading those things that require some thinking about, let us get back to our talk about Matter. Heretofore we have talked about solid substances, and I mentioned at the beginning, that we know of matter in three states, solid, liquid, and gaseous. Do you ever think of the difference between a solid and a liquid? How would you define it? Perhaps you would say that a solid stands by itself, while a liquid requires something to hold it; and that would be a very good definition. But to go back to some of our earlier talks; you recollect that it was stated that all Matter was supposed to be made up of minute parts or atoms. Not that any one has ever seen these, because they are too small to be visible by the most powerful microscope; but all reasoning shows that these really do exist. You will still further recollect that it was said that these atoms were held together by a force called Attraction or the Attraction of Cohesion. We know that this force is very great in steel, as we cannot break it or overcome the force of attraction, without great trouble. But a lump of sugar is readily broken. The attraction between the particles of steel or atoms of steel is much stronger than between the atoms of sugar. In solids we find every degree of hardness, and hardness measures the force of this attraction; steel is harder than lead, lead is harder than sugar, sugar is harder than soap. When the attraction between the particles of a subtance is so weak that it cannot hold its shape, then we have a liquid, and we have any degree of liquidity between such half liquids as tar and such a perfect liquid as water. But all liquids take the form of some solid vessel which contains them. Left to themselves, they spread about and have no definite shape of their own. Heat is the direct opposite of the attractive force. If we wish to overcome the attraction between the particles of lead we put the metal in a ladle over the fire and it soon becomes a liquid. Heat has destroyed the force of attraction between the particles of lead. So with a liquid; if we abstract the heat, and allow the force of attraction to act, it soon becomes a solid, as with water. We have only to extract a certain amount of heat from water, and it at once becomes the solid ice, having all the properties of other solids. But we shall say more of heat at another time, as it is one of the most interesting subjects of any that we have to deal with.

But it is safe to say that the condition of Matter, whether solid or liquid, depends, as a general thing, upon heat, there being but few liquids that have not been reduced to the solid state by abstracting the heat, or what is the same thing, by exposing them to an intense amount of cold; and there are not many solids that, by the application of sufficient heat, have not been brought into the liquid state. What we wish now to take up is, the mechanical properties of liquids. As in solids, there is a wonderful difference in the density or weight, so there is an equal difference in liquids. The heaviest liquid, of which we have any knowledge, is quicksilver or mercury. This is fourteen times heavier than water. On the other hand we have liquids much lighter than water; you know that most oils will float upon the surface of water, because they are lighter, and there are liquids still lighter than any oil. You will recollect that in comparing the weight something was said about Specific Gravity. The Specific Gravity of a solid is its weight as compared to an equal bulk of water. So with the specific gravity of liquids. Water is taken as the standard of comparison, and when we say that the specific gravity of mercury is fourteen, we mean that a given bulk of it, for instance a tumblerful of it, would weigh fourteen times as much as the same tumbler full of water. Not only are the liquids heavier than water, compared in this way, but also those that are lighter than water, using the minus sign. The specific gravity of ether is stated as .713. Perhaps you would like to know how the specific gravity of liquids is taken. There are two ways. One is to have a bottle that holds up to a mark on the neck, just a thousand grains in weight of water. If this bottle be filled up to the mark with quicksilver instead of water, and weighed, the bottle being balanced of course, the weight will be found to be fourteen thousand grains. So if we fill it to the mark with ether and weigh it, the weight will be about .713 grains instead of the thousand; so we say that the specific gravity is —713. This, however, is a slow method of taking the specific gravity. A little instrument called the Hydrometer is used for this purpose, that long word meaning water measurer. The common shape of the hydrometer is shown in figure 1. This you see is a glass bulb, to the upper part of which is attached a stem on which figures are marked. Below it is weighted with shot in order to make it float upright in the liquid. When this is placed in pure water, the point to which

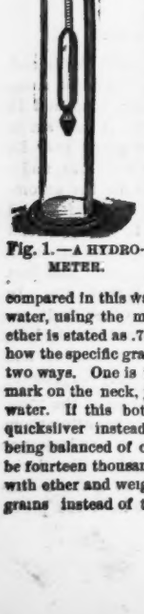


Fig. 1.—A HYDROMETER.

Fig. 2.—THE "POCKETS."

the instrument sinks is marked upon the stem. If this be placed in a liquid that is heavier than water, it will not sink so deep, and if it be placed in a liquid lighter than water, it will sink deeper. By the use of this instrument, we may easily learn the specific gravity of any liquid in which it may be placed. In practice there are two kinds, one for liquids lighter than water, and one for liquids heavier than water, as it would require too long a stem to have one instrument answer for both. These hydrometers are used in testing various spirits, acids, and such liquids the strength and value of which depend upon their specific gravity.

For example, Sulphuric Acid, or as it is more generally called, Oil of Vitriol, is largely used in a great number of manufactures—indeed so important is it in the various arts, that a distinguished man once said that the rank of a nation as to its arts and manufactures could be told by the amount of Oil of Vitriol it used in a year. When this is of proper strength, it is almost twice as heavy as water—its proper specific gravity being 1,845. If the bottle before mentioned as holding 1,000 grains of water, was filled with Sulphuric Acid, it would weigh 1,845 grains. The maker of the acid might add a fourth of its bulk of water, without the knowledge of the purchaser. But the purchaser can at a glance tell whether his acid is of the proper strength, by plunging the Hydrometer into a portion of it. So the Hydrometer is not merely a scientific toy, but comes into use in business life....But we can not just now say more about liquids as there is

AN INTERESTING WHAT IS IT?

to be disposed of. My young friend, Edwin K., sends something which was found on the shore of Long Island Sound. How his "something" looks is shown of the real size, as to width, in figure 2, but was, when found, about eight inches long. It consisted of many oval pockets, each attached by one of its broad sides to a sort of cord that held the whole together. These pockets were of a material much like parchment, or dried bladder in appearance, and like those substances, exceedingly tough. What may be called the front edge of these pockets, that is, the edge opposite that by which they are attached to the cord, is slightly wavy or "ruffled," and there is a small hole at this part. When one finds a thing that seems strange to him he should first

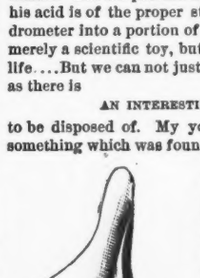


Fig. 3.—THE PERIWINKLE SHELL.

PUT QUESTIONS TO IT,

before putting questions to us. Had Edwin, by shaking, asked if there were anything inside of these pockets, the rattling sound would have said "yes," just as plainly as we can. Then the next question would be—"What is inside of these?" only you would have to ask it with the point of a sharp knife—a little cut, a small opening, and out drop several little things, which rattle down upon the paper you have placed to catch them. These things that were in the pockets, what are they—they do not look like grains of coarse sand, but to make the matter clear you take a magnifier and lo! the story is told—

THE GRAINS ARE LITTLE SHELLS!

and you know at once that this string of pockets or bags is somehow concerned with the early growth of a creature that has a shell. Those of you, who live near the sea shore, must have often seen a shell like that in fig. 3.—only twice as long and wide, and even larger. This shell is shown empty, but it, of course, at some time contained an animal. On our shores this is called

THE PERIWINKLE, OR WHELK,

but is unlike the creatures known in England by those names. The material, sent by my young friend, is the spawn cases of this animal. I suppose that when this spawn is first laid by the animal, there are eggs in the pockets, but I never came across any in which the eggs had not been hatched, and the tiny Periwinkle had each a minute shell, like the large one in shape. Some persons eat the Periwinkle, placing them in water and boiling them, when the animal may be easily removed from its shell. Seeing others eat them, I once tasted a Periwinkle—that taste has answered for half a century, and I don't think I shall ever repeat it. The shells are used by boat-builders. You notice what a long spout, so to speak, it has; the boat-builders use them to run tar into cracks when they are "caulking" the seams of their boats; the body of the shell being filled with tar, it can be poured out through the long, narrow spout, in a very small stream. The scientific name of our Periwinkle is *Pyrula canaliculata*. *Pyrula* is from *Pyrus*, the Latin word for "Pear," and *canaliculata* is from the Latin word for a "channel," and means, having a small channel. If the scientific names of animals and plants look hard and unmeaning to you at first, they will seem different when you learn from what they are derived. A look at the engraving shows that—"The pear-shaped shell that has a little channel," describes it very clearly; *Pyrula canaliculata*, is only a shorter way of saying it.

Our Puzzle-Box.

CONCEALED FABRICS.

1. Jennie is forever bringing Hamburg edging home with her.
2. The plant was recommended to me by a farmer in Ohio.
3. She had read the poems of Walter Scott, only.
4. Tom said he had never read a line, never wanted to, and never meant to.
5. That is a pretty old fossil, Kate.
6. Is a tin trumpet a musical instrument?
7. We need not fear, they will not harm us, Lincoln.
8. Is the composer German or French?
9. As soon as I spied the rascal I concealed the money.

NUMERICAL ENIGMA.

I am composed of 7 letters:
My 7, 6, 5, 1, is a measure.
My 3, 2, 1, is the whole of anything.
My 7, 2, 3, 4, is unorganized earthly matter.
My 7, 5, 6, 4, is a weapon.
My 6, 2, 3, 4, is a metallic oxide.
My whole may sometimes be seen in a drug-store, sometimes on the dinner table, and sometimes in the garden.

PERRY MCI.

CROSS-WORD.

My first is in hobble but not in limp,
My next is in edging but not in gimp,
My third is in hatchet but not in ax,
My fourth is in honey but not in wax,
My fifth is in letter but not in bill,
My sixth is in valley but not in hill,
My seventh is in river but not in lake,
My eighth is in fritter but not in cake,
My ninth is in pleasures but not in joys,
My tenth is in bustle but not in noise:
Now take my advice and be happy and gay,
No matter what any old croaker may say.

DEFINITION PUZZLES.

(Letters with which to form the word defined may be found scattered in each sentence.—*Example.* That by which anything is regulated. Word, *rule.*)

1. The little wheel of a spur.
2. Pertaining to life, very important.
3. Practice, custom. 4. A sort of scuffle.
5. Second growth of grass.
6. Very poisonous, malignant.
7. A place of worship. 8. A piece of mechanism.

PI.

Veah ourcage onehng ot viewer onry now toncend, ot doncmen ti hewer ony dettec fulsat, ot maden ti ot het steb fo onry b. ilty, ot kame dogo loverese orf ruetuf acedning, dan ot peek meth.

SQUARE WORD.

1. A friend. 2. Fat. 3. An asteroid. 4. To impede. 5. Cuts down.

LITTLE FOLKS.

CHARADE.

Hark! the morning bell is ringing
From the steeple loud and clear,
And the pious crowd is wending,
Reverent souls, my first to hear.

On my next the grass is growing,
Maybe 'tis a city lot,
Upon the globe in every land,
I'm sure to find my space and plot.

The hideous whole, how shall I name it!
Cruel, bloody, fearful strife:
I dare not tell the countless numbers
That through me have lost their life.

AUNT SUE.

WORD-MAKING.

(To one of the words in a list, add the letter at the end, and with it transpose the word into another.)

1. List: make, house, slow, phial, them, many; letter, C.
2. List: toe, hold, martyr, coward, lyre, he; letter, B.
3. List: hungry, greed, boots, eye, mustard, cow; letter, L.
4. List: dreamer, broom, servant, gold, zone; letter, E.

DOUBLE ACROSTIC.

The initials form a river, and the finals an animal.

1. To rebuke.
2. Real.
3. An animal.
4. To strike.
5. An exclamation.
6. A city.
7. A metal.
8. To draw.

NIP.

Fig. 1.—SKELETON OF BAT.

CONUNDRUM.

What letter of the alphabet would provide clothes for a poor boy in winter?

ANSWERS TO PUZZLES IN THE AUGUST NUMBER.

WORD MAKING.—1. Add the D. R. to the word "beast," transpose it into "dabster." 2. Local + O. H. = alcohol. 3. Model, earldom. 4. Steam, amnesty. 5. Clean, calcine.

CONCEALED QUOTATION.—Like a dewdrop from the lion's mane he shook in air."

DEFINITION PUZZLES.—1. Quaint. 2. Utensil. 3. Upstart. 4. Vintage. 5. Synonym. 6. Rustic. 7. Ornate. 8. Ruin.

SCATTERED SQUARE.

C A R E
A N O N
R O A D
E N D S

SUBTRACTIONS.—1. Bone—B = one. 2. Stone—St = one. 3. Five—Fie—V. 4. CIVIL—CIL = V. 5. Weight—W = eight. 6. SIX—S = IX.

NUMERICAL ENIGMAS.—1. Never try to appear what you are not. 2. Mocking bird.

CHARADE.—Mushroom.

CROSS-WORD.—Vain-glory.

SQUARE WORD.

H O P E
O P A L
P A I L
E L L A

POSITIVES AND COMPARATIVES.—1. Waif, wafer. 2. Rush, Russia. 3. Tamp, tamper. 4. Ham, hammer. 5. Tend, tender. 6. Ten, tenor. 7. Cent, center. 8. Dress, dresser.

ANAGRAMS.—1. Pettifogger. 2. Burthen. 3. Interpose. 4. Entrances. 5. Reminds. 6. Merchants. 7. Rewarded. 8. Delivery.

ILLUSTRATED REBUS, No. 479.—Contentment is a pearl of great price.

SOME OLD BIRDS IN A NEW FORM.—Partridge, Jay, Lark, Crane, Crow, Condor, Sparrow, Kingfisher, Eagle, Crossbill, Sheldrake.

The Ant and the Fly.

While passing along the roadside to-day I saw a small object moving over the flagging stones of the side walk. At a second glance I saw it was a red ant, and that it was half dragging and half carrying a large fly, which appeared to be dead. That so small an animal could carry so large a load—the fly being two or three times as large as the ant—was interesting, so I stopped to see it done. Thinking what might be hard for the ant to do on the smooth stone, would be given up when greater obstructions were put in the way of its progress I turned the ant, with its load, towards the grass upon the border. It was hard work now, but the ant did not give up by any means, it tugged and pulled the fly over the grass stubble and grass stems that lay across its pathway. Sometimes the stems would make a net-work through which the great load would not pass, and after trying faithfully to break through, the ant would turn to one side and go around the obstruction. In a number of instances, while I stood and watched, the ant would leave the fly when in a tight place and go in search for an easier passage. Once after looking for some time as if in dismay, the ant found a way out, and turning back towards the prize it raised itself on its hind legs and looked around as if to make sure, and then drawing its fore-feet across its head went vigorously at work. This last action may remind you of boys, and men as well, who, when they have some great task to perform, some heavy load to lift, will straighten themselves up to full length and moisten the palms of the hands with the saliva from the mouth. After I had followed the ant with its load for a considerable distance I put myself in its way, and made it go again to the sidewalk where at first, to its joy, it found much better travelling. But wishing to see what might be the ant's regard for its load I caught it and took away the fly. This made the ant much excited, and if the same motions should be made by a boy upon taking anything from him, we would all say that he was mad. The ant soon began to run in gradually widening circles, and very rapidly. The fly was again placed upon the paving stones about a foot from the "run" of the ant, and was in a few seconds in the hands of its captor. I then took the fly from the ant, simply separating them by an ordinary envelope, edge down, when the ant tried its best to crawl under at the point nearest to the fly, but soon saw the folly of this and went around at the end. Just at this time a gust of wind came which lifted the fly up and carried it some feet away. The ant was again in anger, and began its circular motions as before. If my time had not been worth more than that of the ant's, I might have been able to state the results of this search; but as it was I brought the fly back to within a foot of the ant and he was soon happy again. As a parting torment I took the fly again, not raising it into the air, but pulling it rapidly along on the paving stones, when the ant followed in the trail and finally, greatly to its satisfaction, ran off with its booty. U. H.

Fig. 2. SKELETON OF MAN.

Fig. 4.—A FLYING FOX.

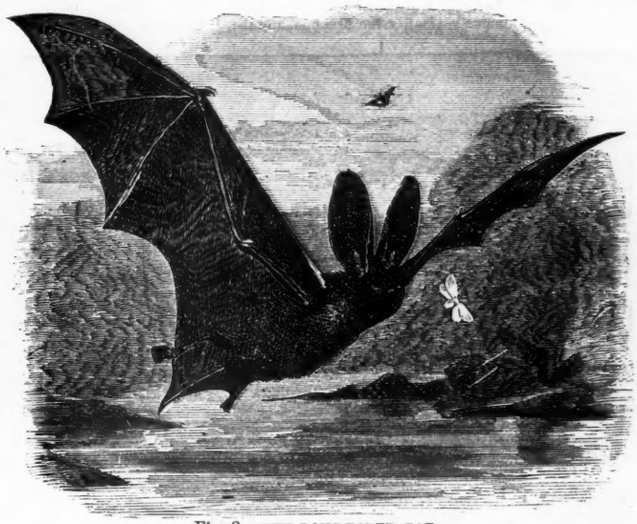


Fig. 3.—THE LONG-EARED BAT.

Something About Bats.

Bats are queer animals. One seldom tires of looking at them—either as they are flying in the air at sundown, or after they have folded their wings for a rest during the day. The early naturalists, that is those who studied natural objects many years ago, were puzzled by the bats; they could fly and therefore they called them birds and put them in the same order as the great Ostrich—which by the way does not fly. Bats have teeth—as many of the boys and girls may perhaps know by experience—and have a fine soft coat of fur; in these things they are like rats and mice. Why is it that a bat can fly through the air, and coming through the open window can flit around the room, while the little mouse is doomed to run upon the ground to be shut away from the bread and cheese of which he is so fond, if he cannot climb to it? The first figure will help us to answer this question. The first thing that one will notice in a bat are its peculiar wings. They are not like a bird's wings, but made up of a thin skin, stretched across from some bones which are made specially long for the purpose. It may be that some of you think the wings are like the top of an umbrella or a portion of one, and the comparison will not be far out of the way. In figure 1 we have the skeleton, or the bones of one of the larger bats, the flesh and all other portions having been removed. Figure 2 shows the skeleton of a man, of course greatly reduced in size. It will be seen at a glance that our own bones and those of a bat are a good deal alike as to number, position, shape, etc. That which just now interests us most are the bones of the hands. In man they are quite short, while in the bat they are very long. The middle finger, for example, being longer than the head and body of the bat. If we had our fingers as long in proportion as those of the bat they would be very much in the way; but if we had those fingers and a tough skin stretched between, then we should have wings like those of the bats; and perhaps we might use them for flying, and have great times in the air.

One of the most common bats is the Long-Eared one given in figure 3. But what is the use of having such big ears? you may ask. There is a common expression: "As blind as a bat." Now, bats are not blind, but their eyes are very small and appear to be of a poor quality; this is especially true with the Long-Eared Bat. To make good for this lack of sharp eyes, the ears are of larger size, and in a measure take the place of the eyes—just as a blind person will make his ears do much of the work that his eyes would do if he could use them. The sense of smell of the bats is also exceedingly acute, the nose being of large size and grotesque form as if it had been turned inside out. These curiously formed noses belong to those bats that pass much of their time in dark caves where there is little or no light. The delicate sense of smell also acts as a substitute for eyes in places where eyes would be of no use. Figure 4 shows one of the Flying Foxes, so-called on account of the red, fox-like color of the fur and foxy head. They are the largest of the bat tribe, some of them measuring five feet across the open wings. Although so large, unless roughly handled, they are not at all dangerous. The Vampire Bat, Fig. 5, is not so large by half as the Flying Fox, but has some very unpleasant stories told about it; it is accused of sucking the blood from sleeping persons. Many tales have been told of this South American bat; which is said to come silently by night and, poising itself upon the naked feet of its sleeping prey, fan the victim with its extended wings, which, producing a cool atmosphere in those hot climates, aid in soothing the sleeper into a still deeper repose. The bat then begins its work by making a tiny wound with its sharp teeth, and with its lips sucks the blood from its sleeping victim until he perishes from loss of blood. This is now considered but a traveller's tale, the real facts in the case being that the Vampire does bite animals and man, but the wound is usually very slight and never fatal.

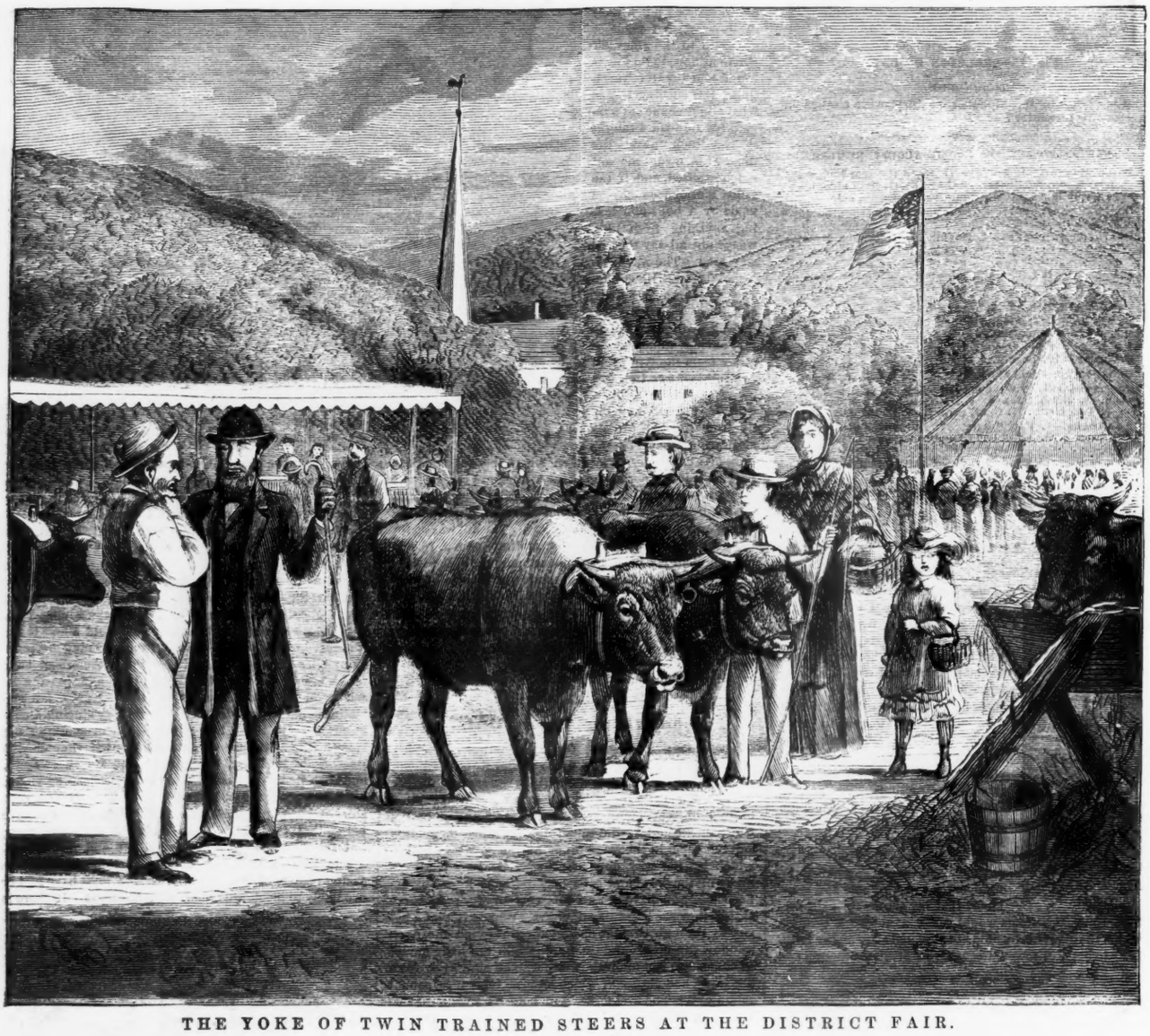
The bats in the north, and those that most of the young readers of the *American Agriculturist* have met or are likely to meet, are small and harmless If there is any lesson of more than unusual importance to be drawn by a study of bats, it is the peculiar development of the hands, or paws, by means of which a group of animals, otherwise closely related to creeping and walking things, can rise in the air, and propel themselves through it with the ease of birds, though with irregular motions more resembling those of moths and butterflies.

Fig. 5.—VAMPIRE BATS.

The Steers at the Fair.

The first fair that I ever went to was a Town Fair held in a grove near where I lived. It was so far away that we had to harness the horses and drive over, all hands going in a large wagon. I remember we hitched the horses on the road side some distance from the gate to the fair-grounds, and gave them some hay to eat while we went to see the sights on the other side of the high fence. The next fair that I attended was held at the same place just about a year after the first one, and the third about a year after that. I might have kept on going to that Town Fair for many more years had it not happened that the Town Fair was changed to a District Fair and the Town Fair and its grounds were given up. How sad and lonesome the old trotting track looked, or rather the place where it was once so smooth and fine—all grown up to wheat, and afterwards to grass! The District Fair was a much larger one than the old Town Fair, as it took in more country. It was held in a much larger field, had more and better buildings; the track was larger and there were ever so many more people that attended it. It cost more to get in too; but it was worth more, for there was much more to be seen. I should probably have kept going to this District Fair every year until this day, and enjoyed it too, had not things so turned that I moved nearly a thousand miles away. But I intended to tell you about some *Steers at the Fair*. The steers were my steers, and the fair was that of the District that has been mentioned. "Our folk" had a great many steers; in fact, there was always one or more yoke to be broken every year, and as the boys were not very numerous in our family, I was "early and often" put to the whip—that is, given the old oxen and then the steers to drive. A boy has his fancies, and I had mine. There was one yoke of steers that were, in my eyes at least, particularly fine. From the day they were born—both on the same day, and cared for by the same mother—they were my steers; not because I had bought and paid for them, but—you know how it is—in name, which amounts to much the same thing. That they looked alike might be expected, being so closely related—twins are often hard to tell apart, especially when they are small. But I knew Fred apart from Frank early in their calf life, and could have told the one from the other in the darkest night. I watched over these calves, combed them, fed them, and perhaps played with them when it would have been just as well as if I had been at work in the garden. They flourished under my care; were plump, smooth, gentle, hungry fellows all the summer long. How I did want to take them to the Fair in the fall; and I should have perhaps done it had it not been that I was taken sick and I was not able to go—and of course the calves could not go. That winter and the following spring the young steers were accustomed to the yoke and taught to draw the hand sled and the little cart. We used to call it "breaking" them; but they were so kind and took so readily to the yoke that the word "breaking" sounds harsh. The fact that they were so obedient may be because I was gentle with them. I had been cruel to other steers, and they had frequently served me an unkind turn—either of the head or the tail—and with this experience and the instruction of my elders I made up my mind to see what "sugar plums" would do with a yoke of steers, or in other words, if kind words and loving hands would not save the use of the whip. They will almost entirely; it is sometimes necessary to let a young steer feel, and with a little smarting of the skin, that there is a master whose will is to be his (the steer's) guide, but in most cases I carried the whip much as some young men I know walk with a cane. The fall after they were a year old, Frank and Fred were as well trained and as trusty as the oldest yoke of oxen on the farm—in fact, I thought more so. The "twin steers" were not only the pride of my young heart, but I observed the whole household took more than ordinary notice of them. It was getting "fair time," and I knew it. I had had that Fair in my mind all the summer through, and thought of it most when my steers behaved the best. They must go, I said, and none of the rest of the folks could raise any objections. I remember the day I took them on foot along the road to be entered as "yearling steers" at the District Fair. But the scene when they were driven out on the following day to be viewed by the judges is much more vividly impressed on my mind. I shall not forget how well the young steers behaved themselves with all the people around—the small boys shouting, the older ones laughing, and the band playing. If I ever do forget that time I will go to my keep-sake drawer and bring out the red ribbon that was tied on Fred's horn as the token that he and his mate had received the first prize. How the other young men with "yearlings" feel I do not know, but as for me I was more than paid on the spot for all the trouble—it was not trouble—that I had been to in bringing up the steers to their present state of usefulness. The artist has rendered me substantial aid in giving you a picture of my young team, and at the trying time when the eyes of the judges—and of the world, as I thought—were upon us. It all paid, boys. The kindness to the calves, the care of them as they grew up, the taking of them to the fair, all paid me, and it will pay any boy that can do likewise. Even a stupid (?) calf has noble traits of character that when brought out will bless the one that has the desire to help it to do it.

UNCLE HAL.



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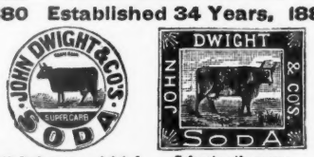

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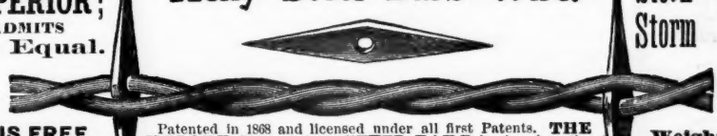

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WHAT IS IT REMOVES THE DIRT?

You may ask washer-women and house-keepers, and your answer from nine out of ten will be, "Plenty of elbow-grease," or in other words, laborious rubbing upon the wash-board. And such is the case, for you first rub soap upon the cloth, and then you have to *rub it in* to make the dirt soluble; but does that remove it? No; to do that you must dip it in the water and rub repeatedly to *force water* through the fabric, again and again. That is what removes dirt after having been softened by the chemical action of the soap.

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Mechanical devices take the entire time of a person during the whole wash, and will not remove streaks from clothes. It is harder to operate them than to use the common wash-board. They are constantly getting out of order, and wear out in a short time. With all *such devices*, as well as the *rubbing-board* there is *great friction* and consequent *unnecessary wear* and *tear* of clothing. With the Washer and Bleacher there is *no friction* or *wear* of the fabric whatever; washing, baking, and housework are contempo raneous operations—the fire doing the washing and baking, while the housewife does her housework. As stated, *water force* is what removes dirt from the fibre of the cloth.

A large body of water is required to hold in solution a comparatively small amount of dirt.

THE PRINCIPLE OF THE WASHER AND BLEACHER

embodies all the essential points. First, we have the desired heat which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which produces a rapid *downward current or water force* through and through them, thereby removing the dirt. Third, we use a *large body of water*, which holds the dirt in solution. Fourth, we use but a small quantity of soap. Fifth, the washing is done by water, and *not by steam*. This process cannot injure fabrics. It cleanses thoroughly, *rinsing the clothes* being all that is required to complete the operation.

THE PHILOSOPHY OF THE WASHER AND BLEACHER IS THIS:

We have 5 lbs. of metal, which attains a much greater degree of heat than the water surrounding it, consequently the water *underneath* the Washer becomes hotter and more expansive than in any other part of the boiler, and is thereby thrown to the surface through the tube; thus tending to produce a vacuum underneath the Washer at the bottom of the boiler, into which the water is rapidly drawn.

As it passes along the channels of the Washer, the curved and contracted throats of which prevent its flowing backward, it becomes hotter and hotter, consequently more expansive and more forcible until thrown to the surface, thus producing a powerful suction beneath the clothes *through which* the water *must pass* in a rapid *downward current*, thereby obtaining a *water force* which cannot be obtained by any other method known in cleansing fabrics. Thus, we get a combination. **FIRST, WE HAVE THE DESIRED HEAT. SECOND, PERFECT CHEMICAL ACTION OF THE SOAP. THIRD, FORCE OF WATER—ALL OF WHICH ARE REQUIRED TO THOROUGHLY CLEANSE AND PURIFY ANY FABRIC.**

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has a perfect fitting pipe, and is a combination of metals which does not become sticky or dirty. It comes out of the boiler as bright as new.

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The Washer is composed of metal and cannot get out of order.

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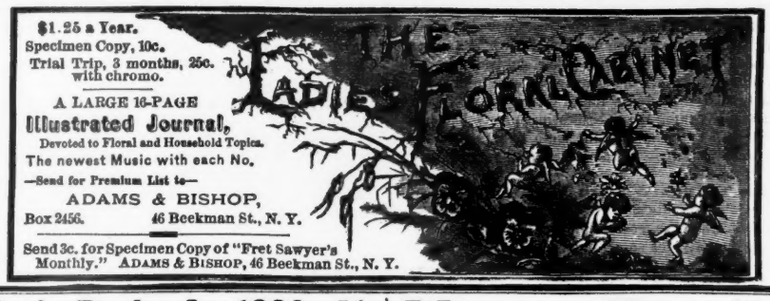

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 420.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

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Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Hen Manure and Ashes.—"F. H. A." can buy unleached wood ashes at 10 cents a bushel and hen-manure at 15 to 20 cents, and wants to know which he had better devote his energies to gathering.—No doubt the hen manure is the cheapest at the rates stated for most crops. Yet it would be quiet worth while to collect the ashes too, especially for application upon grass land. As for night-soil, it will be time enough to collect that when you have exhausted the locality of hen-manure and ashes. Read the brief article on "Manuring with Brains," in the August No., page 302.

How to Preserve Eggs.—"F. B.," Colorado. A common way is to pack eggs in barrels and fill up with water drawn off from freshly slaked lime, allowing some of the slaked lime to go with the water. Such eggs sell at a low price as "limed eggs." Any method for excluding the air will preserve eggs for some time, but they will not be fresh eggs.

Hessian Fly Attacking Rye and Barley.—"C. B.," Nemaha Co., Neb., inquires, whether the Hessian Fly attacks Rye and Barley. We have never observed the fly upon any grain but wheat, but Dr. Chapman is quoted by Harris, ("Insects Injurious to Vegetation") as saying in the Encyclopædia Britannica, that in 1797 they were found west of the Alleghany mountains, and that wheat, rye, barley, and even timothy grass were attacked by them.

How to Kill Canada Thistles.—"J. S.," Henry Co., O. Canada thistles are easily destroyed if one can have patience to keep them cut off as fast as they come to the surface. This may be done by putting some root crop like mangels on the ground, working in it the whole season through, and doing this two years in succession. Smothering with swamp grass or straw will destroy them.

Catching Gophers.—"H. K.," Council Bluffs, Iowa, writes: "I noticed in the *American Agriculturist* that you ask for a better way of destroying gophers, than that of poisoning them. I am very successful in catching them in steel traps, the only trouble is that few people know how to set them properly. When I want to catch one I go to one of the freshest hills I can see, and dig into it until I come to the hole, then I dig out the earth a little until I can see where the hole forks, and carefully remove a little earth from the bottom, so as to allow of the traps being placed level with the bottom of the run, then fill up the unevenness around the trap with some fine earth. I build the mouth of the hole up with clods, and ten chances to one that you will have him by next morning, and some times in an hour or less. I think this is the best way, as it costs nothing but a trap and the trouble of setting it. Use no bait.

Hints and Helps for Everybody.—The giving of a large number of labor-saving—and consequently money-saving—appliances, has always been a conspicuous feature of the *American Agriculturist*. In no former years has it given so many as in that now closing. This we attribute to a word of encouragement given early in the year, which we would now in substance repeat. If in the work of the farm, the garden, or in that of the house, you have found any contrivance or device especially useful, no matter how simple it may seem, if it is useful to you it may be so to thousands of others. Such things are usually best described by a drawing. Whether you can draw or not, make a sketch, no matter how rude, if the measurements are put upon the parts, we can make an engraving from it. Every reader can at some time help many others by sending us sketches of useful devices for the farm, garden, etc.

To Grow Weeds.—Thoroughly prepare the soil by plowing, harrowing, and manuring—all this costs money—in fact prepare the soil as if a crop of roots or grain was expected, then sow or plant the seed of some agricultural plant, carrots are good, but turnips will do, and leave the soil to take care of itself. At the end of the season, if there is not a full crop of weeds with seed enough to stock the whole neighborhood it is not your fault, for as a grower of weeds you have done your part. The truth of this statement is founded on an extensive series of experiments, in this and other countries, that settled this point long ago.

Warts.—"J. S.," Baltimore, Md. Warts consist of an enlargement of the papillæ of the skin with a thickening of the epidermis or scarf skin. They appear more frequently on young animals, and affect various parts of the body—the under side of the abdomen, the mammary gland, the eye-lids and lips being the favorite seat of the affection. They often disappear without treatment, but in some cases are quite persistent. When of the pedunculated form (*i. e.* small at the base) they may be readily removed by a ligature, or by twisting, or they may be snipped off with scissors. If the base is broad, repeated applications of strong acetic acid will remove them by a gradual destruction of the epidermis covering the tumor. We have seen cases in which they appeared in a short time, in large numbers, in young animals, on the underside of the body and legs, and as quickly disappeared without the application of any remedy.

Wild Carrot—a Weed.—"J. S. R.," Rainsboro, Ohio, sends very complete specimens of a plant that is becoming very common in his locality, and wishes to know whether it is a native of this country, etc. The plant is the Wild Carrot (*Daucus Carota*), and is just our cultivated carrot which has reverted to the wild state. This, and its relative of the same family, the Parsnip, are among our most common weeds. In the older States, both are very abundant, but the Carrot is the most so, and often whitens whole fields when in bloom. Being a biennial, it is not so difficult to subdue as some perennial weeds, as it does not spread by the root. It produces seeds in the greatest abundance, and in this manner spreads very rapidly. Each of the little one-seeded fruits, commonly taken for seeds, is provided with a great number of hooks, by means of which it attaches itself to the covering of both men and animals, and is thus readily carried from place to place. It begins to bloom in midsummer, and continues through the season. Its umbels of white flowers, produced in succession, are at first flat, and usually have in the center of the cluster one single dark purple or maroon colored flower. We have occasionally seen plants the flower-clusters of which were purplish throughout. After the bloom is over, the clusters, as the fruits grow and mature, become concave, and at length become of a shape that suggest the children's name of "birds'-nests." If the plant is not allowed to ripen its seeds, it will soon disappear, hence it should be mown while in flower, and if the roots push up other flower-bearing stems, a second cutting must be made. Remember, it will do little good to cut off the flowers from the plants in the fields, and leave ample seed-beds on each side of the roads. If neighbors will co-operate, the Wild Carrot can soon be disposed of. Many may have been troubled by having their cultivated carrots come into flower the first year; this is said to be due to the fact that the seed was raised where the wild carrot was abundant, and the seed-bearing plants had been crossed with the wild. Of the truth of this statement we are not quite sure, but find the belief very common.

Some Things We Can Not Do.—We do not propose to enumerate all the things that we can not do, but recent letters suggest two. We can not find situations in the city for young men. Aside from the fact that 99 in every 100 young men who wish to come to New York had better stay away from it, we have no unfilled place in our own business, and know nothing about the business of others. We can not purchase, or tell parties where to purchase farms. If we wished a farm or a place of any kind, we should at once put our wants in the form of an advertisement, feeling very sure that our next want would be, help to open the many replies that would come to us in answer to the published desire.

The Ailanthus in Nebraska.—"A. H. R.," Willowdale, Neb., writes that he intended to try the Ailanthus, but hesitates, as he has seen a statement in an agricultural journal that the tree is not hardy in "the West," and asks our opinion. We believe that the Ailanthus has not proved hardy in some parts of Northern Illinois, and there may be places in Nebraska where it would not endure the winters. Upon the northern limits of any tree local influences make a great difference, and parallels of latitude do not serve as guides. The Ailanthus flourishes in the climate of Boston, and we think that the injury reported from Illinois is not altogether due to the severity of the climate. Our correspondent, unless he meets with local experience, can easily try the experiment, and if, as proposed, he sets the trees in poor soil, it will be favorable to success.

Exorbitant Charges for Repairs.—"H. C.," a farmer in Orange Co., N. Y., writes us a long and indignant letter upon what he considers exorbitant charges for repairs upon farm machinery. He complains that he pays the price asked for a new machine, but when he needs a small casting he has to pay far beyond what he considers its value, and cites other instances of extortions. We do not see that it would aid our friend were we to give the names of the makers thus accused. The makers of some mowing machines, at least, give a list of every part likely to be needed in repairing, and one can know at the outset the cost of whatever "extras" he may need. In selecting an important machine like a mower, the farmer should take into account two things that are often overlooked; 1st. Are the parts needed for repairs kept in stock; and, 2d, the relative nearness of the factory or agency where they may be had.

Pickles in Glass Jars.—We have many letters asking how to put up pickles so that they will look like those sold in glass jars at the stores. These pickles *look* beautifully, but we can not advise our readers to try to imitate them in all respects. The fine appearance of these pickles is due to two things, the "greening" and to the use of colorless vinegar. The very green pickles are made so by soaking them in a solution of alum, and verdigris. The use of a small quantity of alum, an ounce to every five gallons of water, to harden the pickles, is not objectionable. After the salted cucumbers have been thoroughly freshened by soaking in blood warm water, and changing it every day, until the cucumbers are fresh enough, they are put into the alum water and kept at blood-heat for a day or until sufficiently hard. If they are not green enough, be sure not to use verdigris. The vinegar used is called "White Wine Vinegar," but it is really made from whiskey and water. Its only merit is, that it is colorless, it is a pure acid, and without the fine fragrance and flavor that belong to cider, or even to real wine vinegar. For home use, cider vinegar is vastly preferable; but the pickle makers, for the sake of looks, use the other.

A New Wheat.—G. A. Hisey, of Seneca Co., Ohio, sends half a dozen beautiful heads of an amber-colored wheat which he has raised for two years, and which originated in this wise: "Three years ago," he writes, "a package of wheat was received from the Department of Agriculture, sown, and proved worthless. There were three heads so different and apparently superior, that they were saved and sown. This wheat proves very productive, and the flour is of an extra good quality. It is as early as the Fultz; the straw is stiff and stands up well."—The heads are large, bearded, with eleven spikelets on each side, and frequently three kernels in a spikelet. The grain is amber-colored, above medium size in the samples we have—not plump, but fairly full. It seems to be a variety well worth growing, and should be tried both as winter and spring wheat. If it continues to hold its own with other first class wheats, and is superior in some respects, it should be named and introduced—otherwise not; we have many tolerably good varieties now, and certainly do not want any more.

Pollen Grains Carried by Wind.—Dr. Geo. Engelmann shows the lightness and floating power of the fertilizing dust (pollen) of the pine, in a statement that pine pollen has been found in the streets of St. Louis during a northern storm, from the pine forests on the Red River 400 miles away. Pine trees produce a wonderful abundance of pollen, as any one who has passed through a pine grove, when the trees were in flower, must have observed. The least disturbance given to a branch brings the yellowish dust down in copious showers. The wind has often carried great quantities of pollen to a distance, and deposited in such profusion as to give the idea that there has been a shower of sulphur. We have on several occasions had a portion of the "brimstone" sent us (and the color is not very unlike that of sulphur) from various parts of the country; a glance at the powder through a strong microscope at once shows it to be the pollen grains of pine trees. If those who are disposed to look upon the shower as a warning one of brimstone, would gather a little of the powder and burn it, their fears might be allayed by proving it not to be sulphur.

To Measure Timber.—It is a slow process to obtain the number of feet of lumber in square timber by the actual multiplying together of the three dimensions. All this work is avoided by the use of a Lumber and Log Book by J. M. Scribner, which is made up almost entirely of tables so arranged that the measuring of lumber becomes more a pastime than a tiresome mathematical work. For example, you have a scantling 2½ by 8 inches in area of cross-section, and 19 feet in length. In an instant it is seen that there are 31½ feet of lumber in the scantling. If the timber is round the difficulty of accurately measuring it is made equally easy by this little pocket Log Book. For example, a log with an average diameter of 19 inches, and 45 feet long, is seen at a glance to contain 514 cubic feet. This is one of the most useful little books that we have had occasion to use, and at the small cost of 35 cents, should be in the hands of all who have lumber of any kind to measure.

Soap Boilers' Waste.—"P. G. E.," Balt. Co., Md., writes: "If not too much trouble would you please tell me the value of soap makers' waste; it appears to be principally lime with a large per cent of animal matter, and lumps of soap (I suppose the settlings of the kettles). The soap makers use a large quantity of soda, and it ought to be a strong manure."—Soap boilers waste is a very indefinite term. It is largely common salt (used to precipitate the soap out of the solution in which the saponification has taken place), with some caustic soda. It is worth something, in all probability enough to pay for carting three miles and perhaps enough to warrant paying a few dollars a month for the product of the establishment. The animal matter in the waste does not amount to a great deal. The salt is the main, in fact, almost the only thing of much consequence. Sometimes salt does a great deal of good. Sometimes little or none. The commercial value of such stuff would be as indefinite as its agricultural value.

Central Park.—Much fault has been found with the details of management at Central Park, for several years past. A step has been taken in the right direction in the appointment as Superintending Gardener, of William L. Fischer, who held a similar position in the years when the park was at its best. The public will be the gainer by this restoration of Mr. F. to the position he long and ably filled as Superintendent of the garden.

Drain Tiles.—If properly done, draining is a permanent improvement upon the farm, but it is a paying investment only in such cases. It is not enough to lay the drains in the right direction, with the proper descent, with the proper outlets and well protected. The tiles themselves must every one be perfect; in order that the work may last for generations and give no trouble in the future. If a tile is soft, being half-baked, is cracked, or in any way imperfect, throw it aside. Such a tile is like a weak link in a chain, rendering the good ones useless, and when once laid in the drain is hard to find, and very difficult to mend. Use only the best of tiles.

To Break up a Sitting Hen.—"M. C. D.," Falls Village, Conn., writes: "I notice J. S., of Baltimore, Md., tells how to break up a brooding hen; I think my way better. I keep 100 hens, and have a coop four feet square and two feet high. When I gather eggs at night, I put all sitting hens in the coop, and keep them there two days, feed and water well, and let them out, and find that they soon commence to lay again. I have had the care of fowls for 15 years with good success."

October Fair List.

STATE FAIRS

Alabama	Montgomery	Nov. 8-13
Arkansas	Little Rock	Oct. 18-23
Delaware	Dover	Sept. 27-Oct. 2
Georgia	Atlanta	Oct. 18-23
Illinois	Springfield	Sept. 27-Oct. 2
Indiana	Indianapolis	Sept. 27-Oct. 2
South Carolina	Columbia	Nov. 9-12
Texas	Austin	Oct. 19-23
Virginia	Richmond	Oct. 22-29

Industrial and District, &c.

Am. Institute	New York	Sept. 15-Nov. 27
Chicago	Chicago	Sept. 8-Oct. 3
Cincinnati Ind. Ex.	Cincinnati	Sept. 8-Oct. 9
Illinois Fat Stock	Chicago	Nov. 15-20
Indiana, N. Eas'n.	Waterloo	Oct. 4- 8
National	Washington, D.C.	Oct. 4- 9
N. Y. Western	Rochester	Sep. 29-Oct. 1
Ontario, Provincal	Hamilton	Sep. 20-Oct. 4
St. Louis	St. Louis	Oct. 4- 9

County Fairs.

NEW HAMPSHIRE.

Cheshire	Keene	Oct. 5- 6
Lempster	East Lempster	Oct. 6
Marlow	Marlow	Sept. 30-Oct. 1
Newport	Newport	Oct. 6

VERMONT.

Wilmington	Wilmington	Oct. 6

MASSACHUSETTS.

Berkshire	Pittsfield	Oct. 5- 7
Franklin	Greenfield	Sept. 30-Oct. 1
Hampshire, Franklin & Hampden	Northampton	Oct. 6- 8
Housatonic	G't Barrington	Sept. 29-Oct. 1
Martha's Viney'd	W. Tisbury	Oct. 5- 6
Middlesex	Concord	Sep. 29-Oct. 2
Worcester, N. W.	Athol	Oct. 5- 6
Worcester, West	Barre	Sep. 30-Oct. 1

CONNECTICUT.

Danbury	Danbury	Oct. 5- 9
Hartford	Hartford	Sept. 28-Oct. 1
Killingworth	Killingworth	Oct. 6
New Milford	New Milford	Sept. 30-Oct. 1
Tolland, East	Stafford Springs	Oct. 7- 8

NEW YORK.

Cayuga	Auburn	Oct. 5- 6
Schuyler	Watkins	Sep. 29-Oct. 1
Steuben	Bath	Sep. 28-Oct. 1
Suffolk	Riverhead	Oct. 5- 7
Yates	Penn Yan	Oct. 5- 9

NEW JERSEY.

Burlington	Mt. Holly	Oct. 12-15
Somerset	Somerville	Oct. 5- 8

PENNSYLVANIA.

Bedford	Bedford	Oct. 5- 8
Berks	Reading	Sept. 28-Oct. 1
Blair	Altoona	Sept. 28-Oct. 1
Bradford	East Towanda	Sep. 29-Oct 1
Bucks	Doylestown	Oct. 5- 8
Burgettstown	Burgettstown	Oct. 5- 7
Carbon	Lehighton	Oct. 12-15
Crawford	Conneautville	Sep. 29-Oct. 1
Cumberland	Carlisle	Sep. 25 Oct. 1
Delaware	Greenw'd Sta	Sep. 30-Oct. 2
Franklin	Chambersburg	Oct. 5- 8
Greene	Carmichaels	Oct. 14-15
Lancaster	Lancaster	Sep. 29-Oct. 1
Lehigh	Allentown	Sept. 28-Oct. 1
Lycoming & Clin	Jersey Shore	Sep. 29-Oct. 2
Mercer	Stoneboro	Oct. 5- 7
Mifflin	Lewistown	Oct. 6- 8
Oxford	Oxford	Sep. 29-Oct. 1
Troy	Troy	Oct. 6- 8
Union	Burgettstown	Oct. 5- 7
Union	Lewisburg	Oct. 6- 8
Washington	Washington	Oct. 5- 7
Westmoreland	Greensburg	Sep. 28-Oct. 1
York	York	Oct. 5- 8

MARYLAND.

Frederick	Frederick	Oct. 12-14
Washington	Hagerstown	Oct. 19-22

DELAWARE.

Kent	Dover	Sep. 27-Oct. 3

OHIO.

Allen	Lima	Sept. 28-Oct. 1
Athens	Athens	Oct. 6- 8
Auglaize	Wapakoneta	Oct. 5- 8
Brown	Georgetown	Oct. 5- 8
Butler	Hamilton	Oct. 4- 8
Carroll	Carrollton	Oct. 5- 7
Crawford	Bucyrus	Sept. 28-Oct. 1
Defiance	Defiance	Sept. 27-Oct. 1
Fairfield	Lancaster	Oct. 13-16
Fulton	Tedrow	Oct. 6- 8
Hancock	Findlay	Sept. 29-Oct. 2
Hardin	Kenton	Oct. 6- 9
Harrison	Cadiz	Oct. 5- 7
Highland	Hillsboro	Oct. 13-15
Hocking	Logan	Oct. 7- 9
Knox	Mt. Vernon	Oct. 5- 8
Licking	Newark	Sept. 28 Oct. 1
Logan	Bellefontaine	Sep. 28-Oct. 1
Mahoning	Canfield	Oct. 5- 8
Marion	Marion	Oct. 5- 8
Miami	Troy	Oct. 5- 8
Ottawa	Port Clinton	Oct. 6- 8
Paulding	Paulding	Sept. 29-Oct. 1
Perry	New Lexing'n	Sep. 28-Oct. 1
Pickaway	Circleville	Sept. 28 Oct. 1
Preble	Eaton	Sept. 28-Oct. 1
Putnam	Ottawa	Oct. 6- 9
Richland	Mansfield	Sep. 28-Oct. 1
Sandusky	Fremont	Sept. 28-Oct. 1
Seneca	Tiffin	Sept. 28-Oct. 1
Shelby	Sidney	Sept. 28-Oct. 2
Stark	Canton	Sept. 28-Oct. 1
Summit	Akron	Oct. 5- 7
Tuscarawas	Canal Dover	Sept. 28-Oct. 1
Union	Marysville	Sept. 28 Oct. 1
Van Wert	Van Wert	Sept. 30-Oct. 2
Washington	Marietta	Sept. 29-Oct. 1
Wayne	Wooster	Oct. 6- 8
Wood	Tontogany	Sept. 28-Oct. 1
Wyandot	Up. Sandusky	Oct. 12-15

INDIANA.

Daviess	Washington	Sept 28-Oct. 2
Elkhart	Goshen	Sept. 28-Oct. 1
Greene	Linton	Oct. 4- 8
Jay	Portland	Oct. 5- 8
Knox	Vincennes	Oct. 11-16
La Porte	La Porte	Sept. 29-Oct. 1
Morgan	Martinsville	Oct. 5- 9
Noble	Ligonier	Oct. 6- 9
Perry	Rome	Oct. 4- 8
Porter	Valparaiso	Sept. 29-Oct. 1
Stark	Knox	Oct. 4
Steuben	Angola	Sept. 28-Oct 1
Warrick	Boonville	Oct. 12-16

ILLINOIS.

Carroll	Mt. Carroll	Sept. 28-Oct. 1
Clay	Flora	Sept. 28-Oct. 2
Crawford	Robinson	Sept. 28-Oct. 1
Cumberland	Prairie City	Sept. 29-Oct. 2
Edwards	Albion	Sept. 28-Oct. 1
Fayette	Vandalia	Sept. 29-Oct. 1
Franklin	Benton	Sept. 28-Oct. 1
Fulton	Canton	Out. 4- 8
Fulton	Avon	Sept. 28-Oct. 1
Gallatin	Shawneetown	Oct. 5- 8
Greene	Carrollton	Oct. 19-22
Jefferson	Mt. Vernon	Oct. 12-15
Jersey	Jerseyville	Oct. 12-15
Jo Daviess	Galena	Sept. 28-Oct. 1
Lake	Waukegan	Sept. 27-Oct. 2
Lawrence	Lawrenceville	Oct. 6- 9
Marshall	Wenona	Sept. 27-Oct. 1
Massac	Metropolis	Oct. 13-16
Perry	Pickneyville	Oct. 5
Randolph	Sparta	Sept. 29-Oct. 1
Randolph	Chester	Oct. 19-22
Sangamon	Springfield	State fair
Williamson	Marion	Sept. 28-Oct. 1

MICHIGAN.

Alpena	Alpena	Oct. 5- 8
Bay	Bay City	Sept. 28-Oct. 1
Calhoun	Marshall	Oct. 4- 7
Cheboygan	Cheboygan	Oct. 4- 5
Chippawa	Sault Ste Marie	Oct. 4- 5
Clinton	St. Johns	Oct. 4- 5
Genesee	Flint	Sept. 28-Oct. 1
Grand Traverse	Traverse City	Sept. 28-Oct. 1
Hillsdale	Hillsdale	Sept. 27-Oct. 1
Huron	Bad Axe	Oct. 7- 8
Jackson	Jackson	Oct. 4- 8
Kalamazoo	Kalamazoo	Sep. 28-Oct. 1
Lapeer	Lapeer	Sept. 28-Oct. 1
Lenawee	Adrian	Sept. 28-Oct. 1
Macomb	Mt. Clemens	Sep. 28-Oct. 1
Midland	Midland	Oct. 6- 8
Newago	Newago	Sep. 29-Oct. 2
Oakland	Pontiac	Sept. 28-Oct. 1
Oceana	Hart	Sept. 28-Oct. 1
Plainwell	Plainwell	Oct. 5- 8
Tuscola	Watrousville	Sep. 29-Oct. 1
VanBuren	Paw Paw	Oct. 5- 8
Washtenaw	Ann Arbor	Sept. 28-Oct. 1
Wexford	Sherman	Sept. 30-Oct. 1
Violinia Far. Club	Violinia	Oct. 4- 5

WISCONSIN.

Boscobel	Boscobel	Oct. 5- 8
Calumet	Clinton	Oct. 6- 8
Waukesha	Waukesha	Oct. 5- 7

IOWA.

District	Agency City	Oct. 5- 8
Harrison	Mo. Valley	Oct. 6- 8
Jasper	Newton	Sept. 28-Oct. 1
Union	Afton	Oct. 6- 8

KENTUCKY.

Boyd	Ashland	Sept. 29-Oct. 1
Christian	Hopkinsville	Oct. 6- 9
Daviess	Owensboro	Oct. 13-15
Henderson	Henderson	Sept. 28-Oct. 2
McCracken	Paducah	Oct. 5- 9

MISSOURI.

S. E. District	Cape Girardeau	Oct. 12-16

SOUTH CAROLINA.

Anderson	Anderson	Oct. 20-22
Abbeville	Abbeville	Oct. 13
Barnwell	Barnwell	Oct. 20-22
Newberry	Newberry	Oct. 6- 8
Orangeburg	Orangeburg	
Sumter	Sumter	Oct. 13-15
Union	Union	Oct. 26-28

KANSAS.

Dickinson	Abilene	Oct. 13-16
Doniphan	Troy	Sept. 28-Oct. 1
Franklin	Ottawa	Sept. 29-Oct. 2
Greenwood	Eureka	Oct. 7- 9
Harvey	Newton	Sept. 29-Oct. 1
Jefferson	Oskaloosa	Sept. 28-Oct. 2
Linn	LaCygne	Sept. 28-Oct. 1
Miami	Paola	Sept. 29-Oct. 2
Montgomery	Independence	Sept. 30-Oct. 2
Riley	Manhattan	Sept. 28-Oct. 1
Shawnee	Topeka	Oct. 5- 8

The Army Worm.—Prof. C. V. Riley read a paper on the Army Worm at the recent meeting of the Association for the Advancement of Science, in which he said: "The fact is demonstrated that the insect hibernates in the larva as well as in the imago state; that there are several annual generations in southerly latitutes, and more than one in New England; that the destructive generation is not always first, as has been supposed; that turning over a field in winter, though productive of much good is not an infallible preventive; that a wet season is not necessary to its excessive multiplication and injurious manifestations, as Fitch maintained; and finally, the true reason why the insect is more injurious in or near low, rank, wet or swampy grass lands is doubtless because such lands are most often neglected and not pastured, and because the moth finds an abundance of nourishment in such places."

Feeding Young Animals.—There is danger of over-feeding young animals and especially with rich food. Young colts, for example, are frequently injured by having too much meal, shorts, etc., fed to them. It is better to give them coarser food, even though they may not look so fat and plump, as their digestive apparatus will not thereby be overtaxed and injured.

A Farmers' Club.—The town of Bedford, Westchester Co., N. Y., has a Farmers' Club which meets the last Friday of every month at 2 P.M., at the house of one of its members. This Club, which was established in 1852, lays out a plan for the year's work by selecting a list of subjects for discussion. This list is printed on a portion of the postal card which the Secretary of the Club uses in notifying the members of the coming meeting, etc. The subject for the monthly discussions for 1880—1881 are as follows: "April, What crops shall we grow?—May, Weeds, and how to destroy them.—June, Fruit and flower show.—July, Farmers' Recreations.—August, The possibilities of 100 acres of average land in the town of Bedford.—September, Renewal of pasturage.—October, Keeping Fruits for family use.—November, Warming and ventilating our houses.—December, Sleds for farm and road use.—January, Farm dogs.—February, Culture and profits of small fruits in this town.—March, Annual meeting, election, miscellaneous business, etc." We commend this method of the enterprising Bedford Farmers' Club to the thoughtful consideration of other Farmers' societies, associations, etc.

Feeding Bran.—In a ton of wheat bran there are 54¼ pounds of Phosphoric Acid, and in a like amount of rye bran 68¾ pounds. Rye bran is also richer in Potash, hence for food and the resulting manure, rye bran is to be preferred to wheat. It is beyond question that in feeding bran a good part of the profit is made in the superior quality of the manure, and if the direct results of the feeding of bran pay, the increased value in the manure is all clear gain. Bran is an excellent food for the production of milk, and also for young stock.

Corn Smut.—"P. H. F." The trouble with your corn is caused by a parasitic fungus *Ustilago Maydis*, commonly called "Corn Smut." This fungus attacks the ear and sometimes the tassel, and even the joints of the stalks. It changes the grains into large swollen masses of a fine, dark-brown, dusty powder. The only remedy is to cut off the diseased portions and burn them; if left without being destroyed the fine spores will propagate the trouble in succeeding years. Cattle should not be allowed to eat smutted corn in any considerable quantities, as it is found to be injurious to them.

A Principle in Feeding.—All food beyond such amount that is properly digested and assimilated by the animal is a source of loss to the owner, and that in two ways: First, the food is lost; and second, the animal is not kept in the best condition for getting the most out of its feed—its stomach is overloaded and its digestive apparatus more or less disarranged. Just inside the limits of assimilation is the point to have in view in feeding; in this way the animal will have a good appetite, and other things being equal, is sure to give the best returns for food consumed. There is a golden mean in feeding farm stock, which the farmer should find.

American Tea.—Some time ago Mr. Jackson, a Scotchman by birth, and for fifteen years a grower of tea in India, came to this country and was soon impressed with the importance of the American tea question, then under investigation by the Department of Agriculture. Mr. Jackson went through several of the Southern States, examining the soil, climate, etc., and finally bought a plantation in Liberty Co., Georgia, upon which a number of tea plants had been set out some twenty-five or thirty years ago. The place was cleared up and new tea plants set out, so that at the present time there are 165,000 tea plants under Mr. Jackson's care upon his plantation. Congress has made an appropriation of the small sum of $5,000 to further the culture of tea, and the Commissioner of Agriculture, with the assistance of Mr. Jackson and others, intend to push forward the experiments, and finally hope, and at no distant day, to demonstrate that not only good tea can be grown in many parts of the United States, but that it can be produced with a good profit.

Action of Lime on the Soil.—Lime, as it comes from the kiln, is known as caustic or quick lime—the heat having expelled the carbonic acid gas of the carbonate of lime or lime stone. Upon exposure to the air and moisture this caustic lime absorbs water and carbonic acid gas, and again returns to the carbonate. During this reversion it decomposes vegetable matter and sets the elements of plant food free. It is in this power to prepare food for the growing crop from the vegetable matter in the soil that the chief value of lime resides. The greater the per cent of the lime that is in the caustic state, the more valuable it is for this work. The quicker the lime can be applied after burning the better.

Feeding for Manure.—"W. L.," Duchess Co., N. Y. There is no question that profit can be made by buying steers *of the right kind* in the New York or Albany markets, taking them to your farm and feeding them until the spring and then selling them. There will be profit on the meat made and on the manure left. But profit cannot be made unless the right kind of steers are purchased. Thrifty, healthy, but unripe animals are what are needed, of a kind that will fatten easily. Thin grade Colorado steers, fresh from grass, sell in the New York market at 7¼@8c. per lb., and when fat these bring 9c. per lb. So that there is not only the gain in flesh, but the gain in price on the whole weight as the return for feeding. There is doubtless a good opening in this direction for an increased business, which is done to some extent already, even in the vicinity of New York.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Sept. 9th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	491,000	7,840,000	4,661,000	316,000	——	1,181,000
27 d's *last* m'th	407,000	7,864,000	5,878,000	63,000	219,000	926,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	436,000	28,214,000*	15,930,000*	212,000	——	2,406,000*
27 d's *last* m'th	419,000	25,166,000*	14,181,000*	239,000	——	2,283,000*

* Including forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1880	491,000	7,840,000	4,661,000	316,000	——	1,881,000
27 days 1879	426,500	6,268,000	1,209,000	489,000	206,000	1,287,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1880	436,000	28,214,000	15,930,000	212,000	——	2,406,000
27 days 1879	485,000	19,130,000	7,724,000	501,000	14,000	1,835,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Sept. 7, '80	2,636,742	2,326,245	65,612	15,471	76,976	174,033
Aug. 16, '80	3,046,607	1,784,441	46,004	25,283	78,910	202,553
Sept. 8, '80	2,687,933	2,512,454	156,458	26,107	759,686	697,668

4. *Exports from New York, Jan. 1 to Sept. 4.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye* bush.	*Barley.* bush.	*Oats.* bush.	*Peas* bush.
'80	2,843,000	41,867,000	33,150,000	1,134,000	271,000	379,000	836,000
'79	2,601,000	36,657,000	23,376,000	2,381,000	118,000	319,000	225,000

CURRENT WHOLESALE PRICES.

	Aug. 11.	Sept. 9.
FLOUR—Super to Extra State	$3 50 @ 4 50	$3 25 @ 4 15
" Super to Extra South'n	3 50 @ 6 75	3 25 @ 6 25
" Extra Genesee	4 60 @ 6 00	4 25 @ 5 75
" Superfine Western	3 50 @ 4 40	3 25 @ 4 00
" Extra Western	4 00 @ 8 50	3 75 @ 8 25
" " Minnesota	4 00 @ 8 50	3 85 @ 8 25
RYE FLOUR, Superfine	4 50 @ 5 05	4 40 @ 5 00
CORN-MEAL	2 50 @ 3 25	2 50 @ 3 25
CORN-FLOUR, ₱ bbl	2 75 @ 3 35	2 85 @ 3 85
OAT-MEAL, ₱ bbl	4 75 @ 6 25	4 50 @ 6 50
WHEAT—All kinds of White	98 @ 1 14	95 @ 1 06½
" Red and Amber	90 @ 1 10	90 @ 1 06
" Spring	90 @ 1 09	90 @ 1 02½
CORN—Yellow	48½@ 53	52 @ 61
" White	51 @ 55	51½@ 55
" Mixed	45 @ 48¾	50½@ 51½
OATS	36 @ 45	37 @ 45
RYE	78 @ 84	86 @ 89
BARLEY	Nominal.	75 @ 95
HAY—Bale, ₱ 100 lbs	70 @ 1 10	70 @ 1 05
STRAW, ₱ 100 lbs	45 @ 1 05	50 @ 85
COTTON—Middlings, ₱ lb	11¾@ 11¾	11¾@ 11¾
HOPS—Crop of 1880, ₱ lb	40 @ 75	21 @ 40
" old, ₱ lb	4 @ 15	4 @ 14
FEATHERS—Live Geese, ₱ lb	35 @ 48	40 @ 50
SEED—Clover, W. & St. ₱ lb	7¾@ 8¾	8¼@ 8¾
" Timothy, ₱ bushel	2 65 @ 2 90	2 80 @ 2 85
" Flax, ₱ bushel	1 33 @ 1 40	1 30 @ 1 35
TOBACCO, Kentucky, &c., ₱ lb	8 @ 14	4 @ 15
" Seed Leaf, ₱ lb	8 @ 40	5½@ 50
WOOL—Domestic Fleece, ₱ lb	22 @ 50	20 @ 48
" Domestic, pulled	22 @ 50	20 @ 46
" California	15 @ 34	15 @ 35
TALLOW, ₱ lb	6¾@ 6¾	6¾@ 6¾
OIL-CAKE—₱ ton	30 50 @ —	29 00 @29 50
PORK—Mess, ₱ bbl	14 25 @14 50	— @ 16 00
" Extra Prime, ₱ bbl	11 00 @12 00	12 00 @12 50
BEEF—Extra Mess	10 00 @11 00	10 00 @10 50
LARD, in tres. & bbls, ₱ 100 lb	7 50 @ 8 12½	8 25 @ 8 70
BUTTER—State, ₱ lb	18 @ 27	17 @ 28
" Western, poor to f'cy, lb	15 @ 27	16 @ 28
CHEESE	9 @ 12	9 @ 12¾
EGGS—Fresh, ₱ dozen	12 @ 14½	16½@ 19½
POULTRY—Fowls ₱ lb	10 @ 13	11 @ 15
" Chickens, ₱ ₱	11 @ 20	11 @ 18
" Roosters, ₱ ½	5 @ 8	5 @ 8
" Turkeys, ₱ lb	11 @ 14	12 @ 16
" Geese, ₱ pair	1 12½@ 1 62½	1 12½@ 1 62½
" Ducks, ₱ pair	45 @ 55	40 @ 75
" " ₱ lb	— @ —	10 @ 14
PIGEONS, ₱ dozen	75 @ 2 00	75 @ 1 50
SNIPE, ₱ dozen	— @ —	40 @ 1 75
WOODCOCK, ₱ pair	75 @ 80	1 12 @ 1 25
GRASS PLOVER, ₱ dozen	— @ —	2 25 @ 2 50
REED BIRDS, ₱ dozen	— @ —	15 @ 20
PEACHES, ₱ basket	65 @ 1 75	20 @ 1 00
PLUMS, ₱ quart	4 @ 7	— @ —
" ₱ bbl	4 50 @ 6 00	2 00 @ 8 00
APPLES, ₱ barrel	25 @ 1 75	75 @ 1 50
PEARS, ₱ barrel	1 00 @ 7 00	1 25 @ 6 00
WHORTLEBERRIES, ₱ hf bush	1 25 @ 2 25	2 00 @ 2 50
GRAPES, ₱ case	2 50 @ 5 00	1 50 @ 3 25
" ₱ lb	— @ —	1½@ 6
POTATOES, ₱ bbl	75 @ 2 25	1 00 @ 1 75
" Sweet, ₱ bbl	1 50 @ 2 50	1 50 @ 3 00
TOMATOES, ₱ box	40 @ 75	25 @ 50
TURNIPS, ₱ bbl	75 @ 1 25	1 00 @ 1 50
" white, new, ₱ 100 bun	2 50 @ 4 00	2 00 @ 3 00
BEANS, ₱ bushel	1 25 @ 2 25	1 35 @ 1 85
EGG PLANTS, ₱ bbl	1 75 @ 2 50	1 00 @ 1 50
PEAS—Canada, in bond, ₱ bu	— @ —	— @ —
" new, green, ₱ bag	1 50 @ 2 50	1 00 @ 2 00
CORN, green, ₱ 100	50 @ 1 50	50 @ 1 00
STRING BEANS, ₱ bag	50 @ 1 25	25 @ 50
CARROTS, ₱ 100 bunches	1 00 @ 1 50	1 00 @ 1 50
BEETS, ₱ 100 bunches	— @ —	1 00 @ 1 50
CABBAGES new, ₱ 100	3 00 @ 8 00	2 00 @ 7 00
ONIONS, ₱ bbl	4 00 @ 5 50	2 50 @ 2 75
SQUASH ₱ bbl	75 @ —	50 @ 75
WATERMELONS, ₱ 100	5 00 @18 00	7 00 @14 00
NUTMEG MELON, ₱ bbl	— @ —	50 @ 1 50
RADISHES, new, ₱ 100 bunch	50 @ 87½	— @ —
CUCUMBERS, ₱ 100	25 @ 60	20 @ 30
CAULIFLOWER, ₱ dozen	75 @ 4 00	— @ —

An active busines has been reported in Stocks and Money at, however, unsettled prices, closing up stronger, and more or less buoyantly, with Money ruling exceptionally plenty and low as to price, on call or in the discount form.....Real Estate has been held quite confidently, though not, at present, in urgent request.....Most kinds of General Merchandise have been attracting increased attention, and generally at firmer rates. Much freer movements have been reported in Dry Goods, Boots and Shoes, and Hardware. A good demand prevailed for Metals, Laths, Lumber, Lime, Metals, Tobacco, and Groceries.....Cotton has been in generally moderate demand, at irregular figures, closing more steadily....Wool has been dealt in quite sparingly, and has further receded in price, closing rather heavily on free offerings.....A limited call has been noted in Hops, which have been quite unsettled as to values, closing in favor of buyers. ....Hay, and Straw in fair demand....Seeds, more sought after.... Clover quoted higher... Petroleum has been fairly active, but unsettled, leaving off more firmly..... Naval Stores have been held higher, but not very active. ....A brisk business has been reported in Breadstuffs, which, however, have fluctuated widely, closing for most kinds of grain and flour lower, and, as a rule, weak. Speculation in Wheat, Corn, and Oats has been more animated. The export movement in Wheat and Corn has been to a fair aggregate, the Wheat mainly of the new crop of Winter. Cable advices have recently been unfavorable to the export interest. More inquiry has been noted for Spring Wheat for shipment. New crop No. 2 Chicago Spring Wheat was received here on Monday, September 6, by Messrs F. Edson & Co. Samples were exhibited on 'Change, for which the asking price—as per sample—was $1.04 per bushel. The quality was deemed very fine, and the offering averaged 60¼ lbs to the imperial bushel. ....Corn has been in reduced stock, toward the close, and quoted stronger. Rye likewise hardened perceptibly in price near the close, on a light offering and good demand. New crop Barley has not been in much request, thus far, and values have been more or less nominal, as they have been for months past, or since the previous season ended. Oats have experienced frequent and radical changes, due largely to speculative influences, closing for prompt delivery quite heavily, and, in the option line, more firmly. .. Hog Products have been quite active, and quoted dearer, speculation continuing on a liberal scale, especially in Western Steam Lard. Beef and Beef Products, quiet at irregular figures. Ocean freights have been seriously depressed and unsettled, on freer offerings of accommodation, and a comparatively moderate demand, closing weak, including by steam to Liverpool, 5¾@6*d.* per bushel; to Bristol, by steam, to 6¼@7*d.* per bushel; to Antwerp, by steam, to 7¼@8*d.* per bushel, and sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—5*s.* 3*d.* per qr. of 480 lbs....The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 14,405,400 bushels; of Corn, 19,183,350 bushels; of Rye, 665,750 bushels; of Barley, 255,900 bushels, and of Oats, 1,592,000 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Aug. 16	11,356	71	6,657	27,061	24,426
Aug 23	14,049	37	4,582	36,520	25,097
Aug 30	12,883	32	4,716	36,638	26,283
Sept. 6	12,994	45	3,961	37,554	31,836
Total for 4 Weeks	51,282	227	19,916	137,773	107,642
do. for prev. 5 Weeks	71,225	483	25,108	184,423	119,099

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per week	12,820	57	4,979	34,443	26,910
do. do. *last Month*	14,245	97	5,022	36,885	28,814
do. do. *prev's Month*	14,164	87	5,271	34,766	27,096

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Aug. 16	6¼@10¼c.	8¾@ 9¾c.	9¼c.
Aug 23	6¾@10¾c.	8¾@ 9¾c.	9¼c.
Aug 30	7 @10¼c.	8¾@ 9¾c.	9¼c.
Sept. 6	6¾@ 9¾c.	8¾@ 9¾c.	9¾c.

Beeves.—The average number of beeves handled per week has been considerable lower than for some months. The export trade has been light but is increasing. Good choice native steers sold for 9¼@10¼c. to dress 56@57 lbs. Poor to fair ones brought 7¼@9¼c. Stags, old dry cows and rough oxen sold at 2¼@3¼c., live weight, and 7@7¾c. to dress 55 lbs., Texas and Cherokees at 7@7¾c. to dress 55 lbs., and Colorados 8@8¼c....**Milch Cows.** —The number sold has been very small, as the month closes the tone of the market is firmer. Fair cows are quoted at $30 to $40, with prime ones at $45 to $55.... **Calves.**—The average per week has been below that of previous months. Grassers and Buttermilk calves sold at 2@2¾c.; fed calves, 3@4c., veals 4@6¾c., and a few selections at 6¾c....**Sheep and Lambs.**—The market has been firm and fairly active for good sheep, especially for heavy wethers for export, while that for common sheep and ewes has been dull. Fair sheep sold at 4@4¾c., good to choice, 5@5¾c. Poor lambs 4¾@5¼c.; prime 5¾@5¾c.; extra 5¾@6c....**Swine.**—For good hogs the market was firm at the close of the month, with larger sales. Western grass hogs quoted at 4@4¾c.; corn fed. 5@5¾c.; choice lots of Ohios, 5¾c.

The Horse Market.—The receipts are increasing quite rapidly and the demand is more active than for months. Prices remain steady with a slight advance for fine driving teams. A number of fine lots of imports have arrived. These animals have been selected with special care for breeding purposes.

Prices of Feed.

Cotton-seed meal	per ton,	$30.00
Linseed-cake meal	"	37.00
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent), per lb	8 @8¼c.
Sulphate of Potash (potash 44 per cent), per lb	3½@4 c.
do. do. (potash 27½ per cent, per lb	1¾@1¾c.
German Potash Salts (potash 12 to 15 p. c.), p. ton	$14.00@16.00
Muriate of Potash (potash 50 per cent), per lb	2 @2¼c.
Nitrate of Soda, per lb	4¾@5 c.
Sulphate of Ammonia (25 per cent), per lb	4½@4¾c.
Dried Blood (ammonia 13 per cent), per ton	$40.00@45.00
No. 1 Peruv. Guano, Lobos, ammonia, standard, ₱ ton	46.00
do. do. guaranteed, ₱ ton, cargo M	56.00
Soluble Pacific Guano, per ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils), per 1,000 lbs	25.50
do. do. do. (light soils), per 1,000 lbs	25.50
do. do. do. "A" Brand (wheat), ₱ 1,000 lbs	20.00
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	37.00
do. Asparagus Manure, per ton	51.00
Homestead Superphosphate, per ton	40.00
do. Tobacco Grower, per ton	60.00
Banner Raw Bone Flour, per ton	45.00
Stockbridge Rye Manure, per ton	45.00
do. Wheat Manure, per ton	45.00
do. Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Walton, Whann & Co.'s Raw Bone Phosphate, per ton	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

Muck and Manure Compost.—Several inquirers are interested to know the proportion of manure to muck in composts. That depends—1st, on the quality and texture of the muck; 2d, on the richness and heating quality of the manure. If the muck is quite dry and pulverulent, one load of horse manure to five of muck will bring on a good heat soon after the heap is laid up, especially if it gets a good soaking rain. But if the muck is lumpy and the manure stale and perhaps mixed with much litter and cow dung, one to three will be better. After any heap has come to a good heat, cut it over, add more muck if you think it best, and let it heat again. Tankings, ground scrap cake, castor pomace, hen dung, pigeon dung, and many similar nitrogenous and easily fermenting substances are substitutes for stable manure, and may be used in smaller quantities.

Tannery Lime, etc.—"C. C.," of Pittsburgh, Pa., writes: "I can buy spent lime of tannery at $1.50 per 2,000 lbs.; Gas lime, 40c. per load, say 30c. per 2,000 lbs. (latter to be hauled 5 miles); Fresh burnt lime, 14¢. per bushel, say $3.50 per 2,000 lbs.; Dry swamp muck, 30c. per load, say 30c. per 2,000 lbs., delivered at R. R. station, ½ mile from farm. My soil is light, sandy loam, well surface-drained, but very much run down in fertility. I will make considerable barn-yard manure this winter, but I want to know which of the above will be most valuable, and how they should be used to best advantage, separately or together."—We advise the use of the spent lime from the tannery, composted with the dry swamp muck, and of the swamp muck to compost with the stable manure. These composts may be made separately, or the ingredients may be laid up in the same heap, if you avoid bringing the manure in direct contact with the lime. After the first action, when the heap is worked over, it will not make any difference. The tannery lime, we conclude, has more or less animal matter, hair, etc., mingled with it, but has not lost all of its caustic character. If it is old and rather inert, it will be best to compost it with both muck and stable manure, as by itself it would have little action on the muck. See items on Swamp Muck in this number.

Changing the Crop.—The advantages of a rotation, either regular or irregular, result from a number of considerations, some of the more important of which are as follows: First, different crops require food elements in different proportions—thus potatoes require much more potash than wheat, and this crop grown for a succession of years would exhaust the natural supply much more rapidly than when only grown with a number of other crops between, not demanding a large amount of potash. In the second place a rotation, when managed properly, enables one crop to prepare food for another. Clover sends long tap-roots into the subsoil which act as pumps to bring up food elements that may be used by surface feeding crops that follow. Thirdly, as different crops require different methods of cultivation, the rotation can be so arranged that there will be a constant supply of labor distributed throughout the whole season. For the same reason the variety of crops permits of a better cultivation and improvement of the soil, the destruction of weeds, etc.

Time to Give Milk.—The length of time a cow should give milk depends somewhat upon the animal, her natural capabilities, and the food which is furnished her. Some cows will give milk the year round, while others will need to go dry for months. As a rule, it is better for a cow to be "dried off" some weeks—four to six—before salving, thus giving her time to flesh up and gain fresh strength for another season of work. The time thus spent will not be lost, as the more abundant flow of milk and its greater richness afterwards will testify.

Young Men in Horticulture.—From time to time we have had letters from young men with tastes for horticultural pursuits, asking where they could go for instruction in the propagation of plants and other matters relating to plant culture. Generally we have not been able to aid such applicants, but at present we know of an opening where the proper applicant can receive such instruction. Address "Horticulturist," care of the Editor of the *American Agriculturist.*

Moore's Early Grape.—A basket of this recently introduced grape was received September 6th, from the originator, Mr. John B. Moore, of Concord, Mass. The condition of the fruit demonstrated its poor carrying quality. The berry is very large, the clusters medium and compact, the flavor good. It drops from the cluster somewhat and bruises easily, quite as easily as the Concord, we should judge, but is doubtless one of the valuable early grapes for private planting on a small scale.

Prizes at Fairs for Trotting Horses.—Without saying a word in favor of the offering of prizes for mere speed, by our Agricultural Societies, we cannot but commend a common sense suggestion of the President of the "National Association of Trotting-horse Breeders." Instead of offering prizes for "Roadsters," "Horses of all Work," etc., when the great point is trotting ability, he suggests that prizes be offered for "Standard-bred Trotters," which are registered. The Agricultural Societies would thus aid the horse-men in establishing the American trotting horse as a distinct breed, which they are now taking the proper course to accomplish—next to performance, pedigrees cannot be too highly esteemed.

Keeping Cider Sweet.—The methods usually resorted to, to prevent fermentation in cider, like adding mustard seeds, suspending a piece of lean beef, the use of Sulphide of Lime, all add, more or less, a disagreeable flavor to the cider. The Preserving Powder, advertised in another column has the advantage of imparting no flavor while it is efficient and active.

Catalogues Received.

The following are the special autumn catalogues that have been received up to the time of going to press:

NURSERYMEN.

BAIRD & TUTTLE, Bloomington, Ill. Agents for the Bloomington Nurseries. A fall wholesale list.

CHARLES BLACK & BRO., Hightstown, N. J.—A special strawberry list; also peaches and apples.

EVERETT BROWN, Bluff Point, Yates Co., N. Y.—A special grape catalogue, offering the standard varieties.

BUSH & SON & MEISSNER, Bushberg, Mo., besides a grape catalogue, issue a special list of novelties which contain, among other new things, the remarkable seedlings of Mr. Rommel. This firm has established nurseries in Europe to supply the demand for American varieties.

JOHN S. COLLINS, Moorestown, N. J.,—An illustrated catalogue of small fruits of all kinds.

ELLWANGER & BARRY, Rochester, N. Y.—Their autumn lists contain strawberries and small fruits generally; also a new pear, the Frederick Clapp, is figured and described.

G. H. & J. H. HALE, South Glastonbury, Conn.—A strawberry catalogue, with a number of new varieties.

A. HANCE & SON, Red Bank, N. J.—A special strawberry catalogue, with an interesting treatise on culture.

T. S. HUBBARD, Fredonia, N. Y.—Grape vines and other small fruits, with a colored plate of the Prentice grape.

G. S. JOSSELYN, Fredonia, N. Y.—A full stock of small fruits.

JOHN B. MOORE, Concord, Mass. A catalogue of small fruits, "Moore's Early" grape, asparagus, etc.

T. V. MUNSON, Dennison, Texas.—General nursery stock, with Southern specialties.

J. H. RICKETTS, Newburg, N. Y., sends detailed descriptions of several of his new seedlings.

E. P. ROE, Cornwall, N. Y.—His catalogue of small fruits is as full as usual, and always interesting reading.

JOHN VAN LOON, New Amsterdam, Wis.—A choice collection of small fruits, some specialties in seed, with the *American Agriculturist* as a premium.

G. ZIMMERMAN & SONS, Buffalo, N. Y.—A very full list in all departments. The "Catalogue of the Pine Hill Nurseries" is a neat one in many respects.

SEEDSMEN AND FLORISTS.

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J. M. THORBURN & Co., 15 John street, New York.—A bulb catalogue: one of the fullest we have received this year; illustrated.

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B. FADDER & JAHN, Berlin, Prussia.—Papers for bouquets and for fruit plates; interesting as showing what an immense trade there is in such articles.

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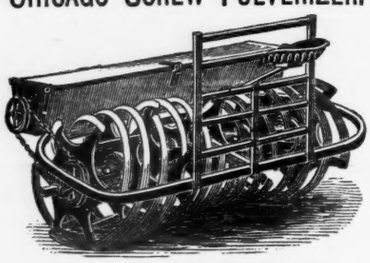

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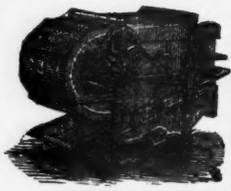

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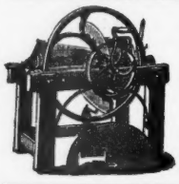

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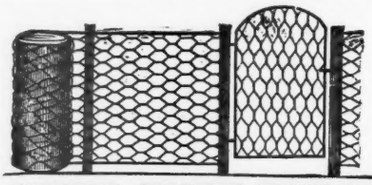

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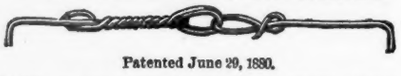

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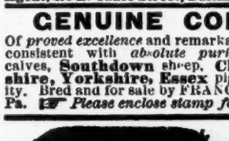

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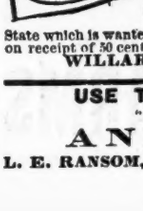

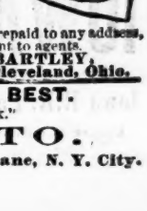

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